WorldCom worries Customers plead for say in reorganization. **PAGE 8.** Network outage spurs concerns. **PAGE 35.**

Next for NetWare Novell is readying a NetWare upgrade that emphasizes resiliency and Web services needs. **PAGE 10.**

NetworkWorld

You'll take

Network executives share their wisdom

Page **12**

Michael Barrett, vice president of Internet systems for American Express and the new president of the Liberty Alliance Project, shares his thoughts on:
- The Alliance's effort to standardize identity management over networks.
- Internet security.

DOUG CROUCH

Is this a do-it-yourself project?

Net execs weigh pros, cons of outsourcing a converged network.

■ BY TIM GREENE AND PHIL HOCHMUTH

ARE YOU READY FOR
CONVERGENCE?
Second of four parts

When Concordia College was upgrading its LAN from shared 10M bit/sec Ethernet to switched Gigabit Ethernet, Verizon approached the school with this proposition: How about running more than just data over the revamped network?

"I told them if I didn't have to pay any more for voice over IP, I'd be willing to [try] it," says Brian Heinemann, dean of IT at the Ann Arbor, Mich., school, which was using Verizon to manage its aging NEC PBX. "I didn't think they could do it, but they kept coming back with bids."

Verizon got the contract, and

earlier this month the school switched 100 of its 400 phones to a Cisco equipment-based IP Centrex service, with plans to convert the other phones over time based on student demand.

Once sold on VoIP, Heinemann quickly realized that outsourcing was his only option. His data staff

is small and he lacks any sort of convergence expert. What's more, he couldn't duplicate in-house the round-the-clock network monitoring Verizon offered.

Concordia faced the same
See Convergence, page 16

■ VON attendees share their VoIP concerns. See page 14.
■ WorldCom polishes its VoIP service. See page 14.
■ See who won the IP PBX vs. IP Centrex Showdown at VON. See page 48.

Technology INSIDER
Ethernet

The dominant LAN technology muscles in on the wide area. Page 51

10G Ethernet attacks the WAN. Page 54

IP storage taps Gigabit Ethernet. Page 56

Ethernet in the first mile. Page 58

PETER BENNETT

Microsoft shuffles deck on Exchange

■ BY JOHN FONTANA

ANAHEIM, CALIF. — Two years ago, Microsoft stuffed a number of collaboration features in Exchange Server with great fanfare. Last week, the company started to tell network executives why it now plans to pluck them out.

At its annual Microsoft Exchange Conference, company executives delivered a clear message that real-time collaboration, most notably instant messaging and conferencing, belongs in the base operating system and not Exchange.

While network executives say they understand Microsoft's strategy, they aren't happy about the hoops they'll have to jump

❝Exchange 2000 users will get equal functionality . . . I will take care of it myself even if I have to fly in and deliver it to them.❞

Paul Flessner
Senior vice president,
.Net Enterprise Servers

through to make the switch.

In the operating system, real-time collaboration features can be tightly integrated with the
See Exchange, page 80

Stretching wireless LANs to the limit

■ BY JOHN COX

Envision a wireless LAN with:
- Nearly limitless range.
- Two or more times the throughput of today's wireless LANs.
- The smarts to match bandwidth to applications.
- Bulletproof security.

This might not be as far off as you think, if even a fraction of the

wireless technologies being cooked up make their way into products and services.

Everyone from network giants such as Cisco to venture-funded start-ups still in hiding are spending heavily in an effort to grab a big or bigger slice of what Gartner says will be a $2.8 billion market by 2003.

During the first half of the year,
See Wireless LANs, page 76

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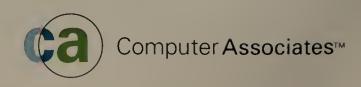
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Features

Technology Insider: Ethernet

Ethernet beefs up to extend its power to the wide area, storage and broadband. **Page 51.**

When DS-3 was too slow to handle Liberty Medical Supply's data traffic, the company made the jump to a 10G Ethernet MAN. **Page 54.**

High-speed Ethernet spurs implementation of a trio of IP storage protocols. **Page 56.**

The proposed 802.3ah standard sets its sights on broadband service. **Page 58.**

PETER BENNETT

Sector Spotlight: Financial services

Firms capitalize on streaming media. **Page 61.**

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Interactive

Sector Spotlight
After reading this week's Sector Spotlight on streaming media in the enterprise, head over to our archive of earlier spotlight stories that highlight how industries are using technology to further their bottom line. **DocFinder: 2639**

VON Showdown highlights
Last week's show featured a showdown that pitted IP Centrex suppliers against IP PBX vendors. Get a list of the participants and see their full presentations. **DocFinder: 2638**

MEC Weblog
Get the inside scoop on the Microsoft Exchange Conference from Senior Editor John Fontana. **DocFinder: 2640**

Seminars and Events

Convergence is a go
Voice and data can finally be converged on the only network that matters: yours. Let keynote presenter Steve Taylor be your guide as he shows you why the time is now for voice over IP. Come to Network World's Tech Update: "VoIP: The Right Time for a Rollout" and find out how to start a VoIP implementation today.
DocFinder: 2645

Columnists

Compendium
The spammers just keep getting more ingenious
Fusion Executive Editor Adam Gaffin alerts you to a report that details how spammers are using the messenger feature in Windows to direct unsuspecting users to spam.
DocFinder: 2641

Help Desk
Sharing a single DSL line
Columnist Ron Nutter helps a user who doesn't know whether to buy a hub or a router to share his DSL between two PCs. **DocFinder: 2642**

SOHO Tech
Selling without the sleaze
Columnist James Gaskin offers advice on how you can use the Web to attract new business without resorting to underhanded tactics. **DocFinder: 2643**

View from the Edge
Cisco: We are broadband
The Edge Managing Editor Jim Duffy examines how Cisco is looking to stimulate the market by stoking competition and lobbying government.
DocFinder: 2644

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We've made it easy to access articles and resources online. Simply enter the four-digit DocFinder number in the search box on the home page, and you'll jump directly to the requested information.

New Bits

■ TheGoodTheBadTheUgly

☺ **Getting in sync.** In its latest show of coordination, Hewlett-Packard last week unveiled a revamped Web site for corporate customers that combines previously separated HP and Compaq sites for doing online business. The new site features a combined product catalog, product status tracking and more.

😈 **Microsoft cleans up.** Speaking at last week's Gartner Symposium/ITxpo, Microsoft CEO Steve Ballmer defended the company's new Software Assurance software licensing plan that has outraged so many customers: "Our goal when we started out was to simplify things. We learned that when you clean things up, sometimes it ends up costing customers more money." ➤

🌐 **Sendmail struck.** An Internet hacker succeeded in implanting a Trojan horse into some copies of the source code for Sendmail. This allowed intruders to access computers on which the popular mail-server was compiled and open networks to attack, the CERT Coordination Center warned last week. The Sendmail development team disabled FTP access to its server on Oct. 6.

DAN VASCONCELLOS

Microsoft patches hole in Outlook Express

■ Microsoft issued a security alert last week acknowledging a serious security hole in its Outlook Express e-mail client. The vulnerability, found in Outlook Express Versions 5.5 and 6.0, could let a remote attacker take control of machines running Outlook Express using malicious code embedded in an e-mail message. Microsoft rated the flaw as critical for end users, but low for Internet and intranet servers. According to a security alert posted on Microsoft's Web site, the vulnerability was discovered in Outlook Express code that is used to support Secure/Multipurpose Internet Mail Extensions, an e-mail security standard that lets Internet users send and receive encrypted e-mail messages. Ironically, the security hole was found in code that is used by Outlook Express to generate a message warning users that problems occurred when trying to verify the authenticity of an incoming e-mail. Microsoft issued a patch for the vulnerability on its Web site.

Never mind 3G . . . here comes 4G

■ NTT DoCoMo last week said it had succeeded in transmitting data over an experimental 4G mobile telephony system at a downlink speed of 100M bit/sec and an uplink speed of 20M bit/sec. The tests were designed to evaluate some of the technologies expected to be part of future 4G packet-switched wireless data systems. Such technology is not expected to be commercially deployed until at least 2010, and much work remains before real-world trials can begin. However, with much of the work completed on 3G technology and its deployment already begun, the thoughts of some in the telecom industry are now turning to 4G. Fourth-generation systems are expected to be capable of transmitting and receiving data at speeds far beyond the 384K or 2.4M bit/sec that today's 3G systems can handle, as NTT DoCoMo's tests indicated.

Impress your corporate friends

■ Here's one for the big-spending corporate types, if there are any left: Tandberg's new Director, a multimedia behemoth that comes with 67-inch XGA LCD screen and videoconferencing capabilities, and doubles as an electronic whiteboard. The $62,000 entertainment center accepts inputs from VCRs, DVDs, document cameras and PCs, with everything controlled via its touch-sensitive screen or an optional 15-inch touch-sensitive unit

Inventive spammers

Some spammers have figured out how to use a Windows application normally reserved for popping up system alerts to get people to go to their Web sites — even if they don't have e-mail or a Web browser running.

Read more at www.nwfusion.com, DocFinder: 2646.

that can be mounted on a podium. Anything displayed on Director's screen can be shared with other videoconference participants.

How low can Lucent go?

■ Only a fool would try to predict at this point. On Friday, Lucent acknowledged that losses for the just-completed quarter will be far worse than previously estimated: 65 cents per share vs. 45 cents. The company also announced another 10,000 layoffs, which means that by year-end it will have 35,000 employees, down from a high point of more than 100,000 just two years ago. Lucent shares were trading at less than 70 cents on Friday.

HP, Critical Path team on messaging

■ Carriers, service providers and other businesses will have a new option to turn to for hosted messaging services next year, thanks to a worldwide partnership announced last week between Hewlett-Packard and messaging vendor Critical Path. Starting in the first quarter of 2003, the companies will jointly sell and support hosted services, including e-mail, instant messaging, wireless access, group scheduling and file storage. The services will be based on Critical Path's messaging software and hosted on Hewlett-Packard servers at its data centers in Europe, North America and Asia. The services will be pitched as a way to help businesses reduce costs, free IT resources and tailor messaging applications more easily for specific groups of users. HP already offers hosted messaging services based on Microsoft's Exchange software and will continue to do so.

Lindows counters suit over name

■ Software maker Lindows.com last week said it has filed for a summary judgment in its battle against Microsoft, claiming that the similarities between the Lindows and Windows names do not impede on Microsoft's trademark because "windows" is a generic term for a type of software product. Lindows, which offers a Linux-based operating system that runs a variety of programs, including applications written for Microsoft's Windows operating system, was sued by the software behemoth last year over trademark infringement claims related to the Lindows and Windows names. But Lindows says "windows" is a generic term, understood by consumers as a key feature of graphical user interfaces. Therefore, Microsoft cannot hold claim over the term, Lindows said in its summary judgment request filed Oct. 3 in the U.S. District Court for the Western District of Washington.

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WorldCom users want say in process

■ BY DENISE PAPPALARDO AND JENNIFER MEARS

NEW YORK — WorldCom's largest customers are so concerned that their interests in the carrier's ongoing bankruptcy reorganization will take a back seat to those of creditors that a group of them is asking a New York court to intervene.

Seventeen WorldCom customers, including Bear Stearns, Capital One, Georgia-Pacific and Procter & Gamble, have asked a bankruptcy court to overturn an earlier decision by the U.S. trustee supervising WorldCom's reorganization and order the creation of a formal customer committee. If that plea is successful, the committee expects it will focus on these areas:

● Contract compliance, service levels and credits.

● Infrastructure maintenance, account support, product development and support.

● Assuring that the reorganization "preserves the ability of enterprise users to obtain services needed from one entity."

The businesses behind this customer committee movement spend $300 million annually with WorldCom on communication services, according to documents filed with the U.S. Bankruptcy Court in the Southern District of New York.

Several companies, including Gateway and Target, that are behind the motion declined comment.

A WorldCom customer not involved in the effort says it is indicative of broader customer concerns. Ulrich Seif, CIO at National Semiconductor in Santa Clara, says the manufacturing firm has been less than pleased with WorldCom's response to its recent service issues.

"WorldCom has not acknowledged an urgency in the whole situation, rather stating that business is better than ever and that they intend to be out of bankruptcy in spring 2003 and debt free — no supporting explanation though," he says. "This position . . . has led to little flexibility on their part concerning our issues. So [the customer request] doesn't surprise us."

Seif says National, a WorldCom customer for the past three years, is looking for an alternate carrier to meet its remote access needs. "We need to reduce the exposure of our enterprise to the uncertainties around WorldCom," he says.

"It's a poor assumption to make that WorldCom ... is going to emerge from bankruptcy with everything it has today debt-free and ready to go," says David Rohde, senior analyst at TechCaliber.

The driving force behind the customers' request is the need to preserve the network and infrastructure that handles their business voice and data traffic, according to the documents.

Customers are concerned that if they have to switch carriers because WorldCom's network infrastructure is not maintained or is sold to a party that is not interested in their ongoing patronage that their businesses would suffer.

The petition says "the loss or weakness of WorldCom would have — indeed is already having — substantial, adverse effects on competition in the market to provide [enterprise voice and data] services."

Customers say if they are forced to move to AT&T or Sprint under duress they will not be offered the best pricing. And if they are forced to move to another carrier, their needs might not be met because the exact services they buy from WorldCom might not be supported elsewhere, Rohde says.

"The situation can be stabilized with user input," he says. "Customers don't want to receive letters saying we're migrating your service to a company you never heard of or [a regional Bell operating company]."

But the WorldCom customers might be angling for an unlikely solution.

"The appointment of a customer committee is not a typical event, but it's not unprecedented either," says Stephen Leach, a partner at Venable, Baetjer and Howard, a Vienna, Va., law firm Leach, who is co-counsel for the group, helped file the motion with the bankruptcy court last week.

"The reality is it is always difficult to get a committee approved by the court other than the unsecured creditors committee, which is provided for by statute," Leach says. "It's hard to assess our chances."

If the court approves the committee, it is up to the court-appointed trustee to select committee members. The committee could consist of the same users that petitioned the court or the trustee could pick other WorldCom customers.

The court has scheduled a hearing for Nov. 12. ■

Gartner analysts lay out network buying strategies

■ BY PHIL HOCHMUTH

LAKE BUENA VISTA, FLA. — Questions about network infrastructure — what to buy when and how much you should pay — were hot topics among industry analysts and the 6,000 or so IT executives who gathered last week at the Gartner Symposium/ITxpo 2002 conference.

Gartner analysts outlined the current network market and laid out strategies for getting better pricing — especially from Cisco — and ideas on how to better plan network upgrades.

Gartner Vice President Mark Fabbi said Cisco and Nortel are still the "main event" in terms of vendors with the most to offer large corporations, although Cisco dominates the enterprise market.
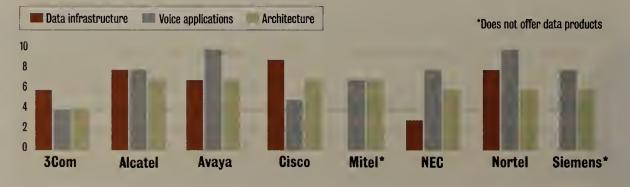
Because Cisco is king in most market-share categories and in the minds of buyers, the company has been able to charge a premium on products, Gartner said.

"As long as customers are still willing to pay, Cisco will continue to charge more," Fabbi said.

One area where he said customers can find discounts is among value-added resellers

Laying it on the line

On a scale from 0 to 10 (10 being highest), here's how Gartner ranks major enterprise vendors in terms of breadth and quality of voice and data offerings.

Legend: ■ Data infrastructure ■ Voice applications ■ Architecture

*Does not offer data products

Vendors: 3Com, Alcatel, Avaya, Cisco, Mitel*, NEC, Nortel, Siemens*

and integrators that mostly sell products to large corporations, because only the largest companies can buy directly from Cisco.

"Cisco is grossly overdistributed," among resellers, Fabbi said. "If you're not getting 30% to 40% off [your Cisco equipment], then something's wrong. Go and bid to two or three resellers — odds are you'll get that discount."

While Nortel's troubles have been widely publicized, most of that turmoil has been with its optical and telecom products, said Gartner Vice President Bob Hafner. The company still has strong enterprise business.

"Pitting Cisco and Nortel vs. each other also can help to bring down costs," Hafner said. "The marketplace is competitive — use it."

Part of Gartner's attitude toward network upgrades is a reflection of the current economy: Hold off until absolutely necessary.

One example Fabbi used was IBM, which until recently was based largely on the company's Token Ring technology, yet the business managed to be successful over the last several years with increased profits and revenue.

"Businesses shouldn't be looking for a [return on investment] over a five-year span any more," Fabbi said. "Now it's more like 18 months to two years."

When the time comes to make a large-scale network purchase, Fabbi stressed the importance of limiting the number of vendors. Having switches, routers and security devices from multiple vendors can add costs.

However, he said convergence-minded corporations should not just swallow whatever voice products their data vendors give them.

The same goes for businesses with voice vendors that also might push data products when convergence plans come up.

"[Voice and data] are still separate decisions," Fabbi said. "You should choose a data network provider, then choose a voice application to run on top of that."

Just as most companies would not choose an enterprise resource planning or CRM application based on what kind of data network they run, the same philosophy should apply to voice, which essentially is just another application, Fabbi added.

In general, companies should approach any network upgrade or rollout with a strategy they've written for themselves — and not one written for them by an equipment vendor, Hafner said. Letting a vendor dictate what should be in your network — from security to convergence and basic LAN switching — can result in too much money spent on gear with features that are underutilized or unnecessary.

"Writing a strategic plan is the least expensive part" of any network project, Hafner said. ■

Novell readying next-gen NetWare

Nakoma release to include new application server, storage features.

■ BY DENI CONNOR

Novell is readying the next version of NetWare to challenge Microsoft's .Net Server by making its flagship operating system more resilient and Web services-enabled when deployed in large distributed networks.

Code-named Nakoma, the upgrade is expected to ship in the first half of next year.

Among the anticipated features are:

• Support for iSCSI, software-based RAID 1 and 5, snapshot backup, storage resource management and data-pooling, which will make network storage more flexible, manageable and fault-tolerant.

• Inclusion of the Novell Extend application server platform, a Java 2 Platform Enterprise Edition-compliant (J2EE) server

the company acquired when it bought SilverStream Software in June.

• An integrated Web portal that combines what Novell says are the best features of SilverStream's portal and Novell Portal Services.

• Integrated DirXML connectivity to Windows NT domains and Active Directory, as well as eDirectory, which lets NetWare LANs be joined with Windows networks.

• Support for blade servers and their management.

Nakoma, now in beta testing, has several features the company says will make it an able competitor against .Net Server.

"We are going to make some explicit moves to help people make an explicit comparison between Nakoma and Microsoft's .Net Server," says Ed Ander-

son, product marketing director for Novell.

One area where Novell says it can pull ahead of Microsoft is with its application development tools.

"As our positioning against .Net, we want to offer SilverStream's Web services tools and application environment," Anderson says. "The whole industry is focusing on J2EE except for Microsoft, who

is focused on the [Common Language Runtime] initiative."

The CLR environment is Microsoft's foundation for developing Web services applications. While proprietary, it is similar in features and functionality to the Java Virtual Machine; CLR applications are developed using Microsoft's C# and other programming languages.

Users are interested in the application development environment and see it as a way for Novell to regain market share.

"[Novell] Extend will hopefully provide a standardized platform on which to build real Web services on top of NetWare," says Jim Michael, IS manager for the city of Chesterfield, Mo. "NetWare runs Java great, thus Extend appears to be a perfect fit." Michael has 10 NetWare 6 servers, most of which run Novell's BorderManager, GroupWise, Apache/Tomcat Web servers and back-up applications.

IT managers also are excited about the new storage capabilities of Nakoma. One technology, snapshot backup, lets images of the data on the network be taken at any point in time, allowing fast recovery and shrinking the time necessary for backing up the network.

"Point-in-time copies help eliminate the ever-present headaches associated with 'open file' backup solutions," Michael says. "The Novell Storage System volumes have been around since NetWare 5, yet backup vendors are only just starting to support open file backups on their volumes — [the products that are available] are still immature and unstable." he says. ■

Nakoma's new features

Here's what to expect in the next version of NetWare, scheduled to ship in the first half of 2003:

Feature area	Details
Application development	Novell Extend application server and portal services; J2EE 1.3-compliant.
Storage	Software RAID 1 and 5; iSCSI, shared files for clustered applications; volume virtualization, storage resource management, snapshot backup.
DirXML	Active Directory, NT domain and eDirectory connectors.
Blade servers	Nakoma version for blade servers and management software.
File and print	Web-based iFolder file storage and management with increased scalability and clustering; iPrint Web-based printing with print-pooling and accounting.
Web applications	PHP and Perl scripts, Apache/Tomcat Web servers, MySQL database.
Branch-office management	Operating system and management tool for remote offices without IT staff.

New products enable integrated portals

■ BY JENNIFER MEARS

SAN DIEGO — Business users looking for a more integrated way to use search, collaboration, content management and other features within their corporate portals might want to take a look at new products from Plumtree.

The portal software maker this week at its Odyssey user conference will introduce products and product updates aimed at extending the portal's features across corporations. Using Web services standards such as Simple Object Access Protocol, Plumtree says it is creating an open foundation that can combine applications and information from legacy systems, regardless of platform.

The foundation includes services that Plumtree says are needed to create Web applications: content management, collaboration, search, identity management and business process automation. The portal ends up being the delivery vehicle for those services, says Glenn Kelman, vice president of product management and marketing at Plumtree.

"Using Web services we can build on a customer's existing infrastructure," Kelman says. "If you're building a Web application it doesn't make sense for every business unit to buy its own content management system, its own search engine, its own security engine. Those are the new sets of services

Beyond portals

Plumtree says a traditional portal is no longer enough. The company wants to provide customers with an e-business framework with these new products.

● **Plumtree Content Server 4.0** — A content management system fully integrated into the portal to handle a variety of data from intranets, extranets and the Internet. Available in November.

● **Collaboration Server 2.0** — Updated to make it easier to create projects, synchronize project updates and collaborate around documents, announcements and calendars that originate anywhere in the company. Available now.

● **Plumtree Search** — An integrated search engine that lets users find digital information anywhere in the company, including within Content Server and Collaboration Server repositories. Available now.

we want to provide regardless of whether an application is running on BEA or IBM or Microsoft, and we want to plug it into a common user environment."

Plumtree customer Pratt & Whitney is interested in using Plumtree's collaboration server to reduce the problems it faces managing homegrown collaboration systems.

"We like the autonomy that Plumtree offers. By that I mean they're not tied to any one computing system or platform. They are autonomous and standards-driven," says Colin Karsten, manager of information services at the aircraft engine manufacturer in East Hartford, Conn.

Karsten says it's important for a portal to provide content management, collaboration,

search and security so that it becomes a "window into your entire world," not just a gateway to some portion of the company.

David Yockelson, senior vice president and director at Meta Group, says customers are looking for search, collaboration and content management to be integrated with portals and are no longer satisfied with buying those pieces separately.

"Plumtree has gone deep into integrating these capabilities into the framework, which really means making them deployable, manageable and scalable. In that I think they still lead a lot of the market," he says.

Plumtree competes with portal vendors such as Epicentric and CoreChange, and bigger companies such as BEA, Computer Associates and IBM, which also are focused on integrating additional capabilities into the portal framework.

Yockelson says Plumtree is on the right track with its expanded focus, but says it will be up to users to decide whether what Plumtree offers meets their needs.

"Plumtree is not going to compete with Interwoven," he says. "But for the organization that can't afford or doesn't want to buy a massive [stand-alone] system, this is absolutely the right direction to go."

Plumtree says that its portal framework still integrates with third-party systems. ■

Q&A

Your take

Network executives share their wisdom

American Express vice president Barrett fights for Liberty Alliance

Michael Barrett, vice president of Internet systems for American Express, recently took over as president of the Liberty Alliance Project, a consortium developing a "federated identity" system aimed at simplifying and securing Internet transactions through use of a universal digital ID card. Barrett recently spoke with Network World *Senior Editor John Fontana about where the alliance is headed and why the effort is so important to American Express.*

Now that you've taken the reins at the Liberty Alliance, what are your goals?

The nature of my job is to help direct strategy with particular regard for the Internet and the technology that we deploy at American Express, so I tend to [think long-term]. In terms of the alliance, everything we have done so far has been very tactical. What I am doing is saying, 'OK, that was the right set of priorities, but we can do a better job of articulating what we think the alliance is going to look like over a longer time frame and what overall classes of solutions are needed.' I am asking the alliance at large a whole lot of questions.

Like what?

They are really around what the organization looks like when it grows up. The organization in under a year went from being kind of a twinkle in a few companies' eyes to an organization with 130 companies, and it is still growing.

What do the Liberty Alliance's efforts mean to corporate customers like American Express?

We had been doing a number of Web services pilots, and whenever we did one, we found that doing the Web services itself was rather straightforward, but the security integration every single time was horrible. Liberty will enable us to build and deploy Web services without having to get into these monstrous point-to-point security integration issues.

What are the highlights in Version 2 of the alliance specification slated to ship early next year?

The identity business is going to evolve much in the same way as automated teller machine networks did, where first of all you had an individual bank and it had its own ATM machines. Customers could use that and then you had these islands or networks that formed and you could interoperate within that network. At the next stage the networks were cross-wired together so you could go to any ATM and get your money out. We believe the same evolutionary path will occur in the identity management space, so Version 1 could be likened to a single network or island of trust. What Version 2 is doing is basically providing the plumbing that wires those islands of trust together. Version 2 also provides a robust mechanism for data to be moved around between partners, but also — and this is the tricky piece — it provides a robust permissioning framework to allow consumers to manage that.

It sounds like there are going to be issues that go well beyond the technology.

The alliance and American Express were explicitly making the assumption that the sorts of islands of trust that we were talking about required that the various partners in those islands of trust had contractual limitations on them that managed things like liability. The first deployments are going to be in the arenas where it is easiest to manage that.

There have been a number of less than successful efforts to federate trust systems, most notably public-key infrastructure [PKI]. What prevents the Liberty Alliance from meeting a similar fate?

One of the things that is pretty unique about Liberty is that it consists of a large and impressive list of vendors and user companies. The user companies touch more than a billion people. That means the alliance has both the technology savvy to build solutions and has companies that can help define in glorious and painful detail what the real problem is and help define it so that the technologist can go off and build solutions. That is pretty unusual. When I think about [public-key infrastructure], it is a technology that was designed by technologists. It is very complex to deploy, and it was never clear what the business problems were that it was solving.

Do you have to find a common ground for the Liberty Alliance and Microsoft's Passport strategy for federated identity management to become a reality?

We have very good working relationships with Microsoft and IBM. They are jointly developing the WS-Security spec and the road map specifications. We have pretty substantial dialogues with them around how we can ensure that these things interoperate and what the longer-term path to convergence is. The [notion] that there must be some kind of a fight with Microsoft will turn out to be an incorrect viewpoint.

Most major Web services specifications are being worked on within standards bodies. Why not this?
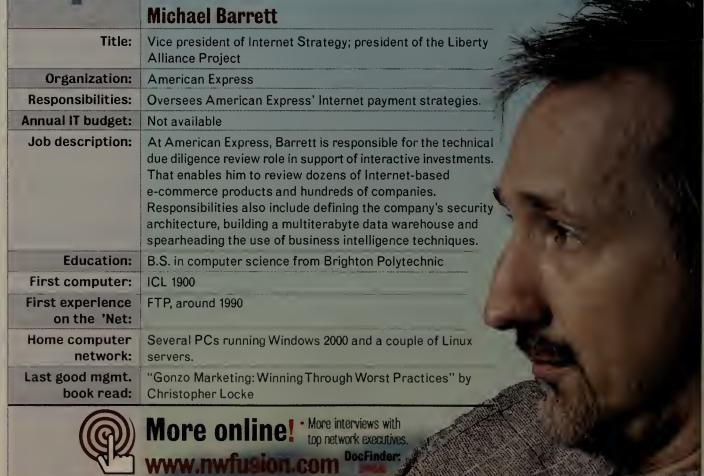
If you look at standards organizations like [the Organization for the Advancement of Structured Information Standards] or [the World Wide Web Consortium], on what dimension do they differ from the Liberty Alliance? For all intents and purposes, the Liberty Alliance is a de facto standards organization.

What does the American Express identity management system look like?

It varies depending on which environment one is talking about. Like most companies, American Express has a range of technologies: Netegrity and Oblix, a homegrown system that, heaven help me, I helped design 10 years ago,

Getting personal

Michael Barrett	
Title:	Vice president of Internet Strategy; president of the Liberty Alliance Project
Organization:	American Express
Responsibilities:	Oversees American Express' Internet payment strategies.
Annual IT budget:	Not available
Job description:	At American Express, Barrett is responsible for the technical due diligence review role in support of interactive investments. That enables him to review dozens of Internet-based e-commerce products and hundreds of companies. Responsibilities also include defining the company's security architecture, building a multiterabyte data warehouse and spearheading the use of business intelligence techniques.
Education:	B.S. in computer science from Brighton Polytechnic
First computer:	ICL 1900
First experience on the 'Net:	FTP, around 1990
Home computer network:	Several PCs running Windows 2000 and a couple of Linux servers.
Last good mgmt. book read:	"Gonzo Marketing: Winning Through Worst Practices" by Christopher Locke

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Users weigh pros and cons of VoIP

Companies wonder whether touted cost savings, advanced applications will be seen.

■ BY TIM GREENE

ATLANTA — Voice over IP might be the wave of the future, but network executives speaking at last week's Fall Voice on the Net 2002 conference made clear that the technology's present is still fraught with doubts.

Users are concerned about how long it will take products and services to mature, whether advanced applications will ever arrive and whether touted cost savings will be realized.

"We don't have the concrete evidence at hand right now that VoIP will save money or guarantee new revenues," said Jeremy George, director of advanced networks at Yale University in New Haven, Conn.

Bill Danz, manager of Wells Fargo Services' corporate voice and networks division, is worried that IP voice might actually cost more than using traditional PBXs. While VoIP gear is less expensive than PBXs, its life span is only three years vs. 10 or more with PBXs. And because the technology is new, it requires more frequent software upgrades, which costs time for staff and injects doubt about network stability after changes.

"Now we have a plain vanilla environment that's been working well and has end users satisfied," Danz said.

Danz said the lack of a clear need for VoIP makes it a tough sell with corporate budgeters. "VoIP is not a hot-button item with corporate executives," he said. If VoIP can support new applications that save money or generate new revenue, then the executives will listen, he added.

The life span of IP voice gear is of concern to Thomas Magee, communications services manager for Mentor Graphics, a software design tools maker in Portland, Ore., with 67 sites worldwide. The three-year replacement cycle he hears about for VoIP gear would radically alter the replacement schedule at Mentor. "All of a sudden change is happening fast to something you're not used to seeing change at all," he said.

There are also doubts about whether voice and data staffs can get along well enough to pull off a VoIP implementation, but VoIP rollouts can also strengthen an IT staff, some observers say.

Kevin Wetzel, manager of global network services at H.B. Fuller in Minneapolis/St. Paul, warned against promoting VoIP cost savings that include laying off the telecom staff. Rather, the case should be presented that the data and voice teams will be cross-trained. That gives the company more IT staffers capable of handling voice and data issues and lets the IT staff members extend their knowledge. Also, the more staff that can handle a certain type of problem, the less often each member is on call with a pager to handle emergencies after hours, he said. (H.B. Fuller worked with an integrator to get its VoIP system running, then took matters into its own hands.)

"The time to support it is pretty low once it's implemented," Wetzel said.

Wetzel said that in the U.S., the big driver for VoIP is reduced management complexities. But for companies with overseas sites, the attraction might have more to do with saving on long-distance calls. He noted that running VoIP in some countries actually results in better voice quality because the phone infrastructures can be so bad.

Yale's George said students will drive acceptance of VoIP by finding useful ways to integrate voice and data on wired and wireless network pilots within the university. That demand will sway university budgeters to fund full-scale rollouts, he said.

George also has to overcome popular doubts about whether VoIP really works. "The only answer I can give is it has so far and there's every reason to believe it will continue to," he said. ■

WorldCom polishes VoIP offer

■ BY DENISE PAPPALARDO

ATLANTA — WorldCom launched enhancements to its voice-over-IP service that promise users stronger security, additional call features and performance guarantees.

The WorldCom Connection service, previously called IP Communications, now lets users send local and long-distance voice traffic over the same data connection (www.nwfusion.com, DocFinder: 2651). WorldCom Connection adds DSL support for small and midsize businesses and also offers local voice traffic support in 34 cities where it owns local networks.

Local support, including emergency 911 service, lets customers eliminate their standard phone service altogether, says Barry Zipp, senior director of enhanced voice services at WorldCom. Until now WorldCom supported only long-haul voice traffic over dedicated IP, frame relay and ATM.

The carrier also is offering VoIP customers performance guarantees for the first time. WorldCom is guaranteeing 99.9% network availability, minimum latency of 55 msec round trip and a minimum packet delivery of 99.5%. WorldCom would not elaborate on how it compensates users if it misses its service-level agreements (SLA), saying it depends on individual customer relationships.

AT&T, which also announced its first VoIP service in January 2001, will offer customers SLAs for its integrated offering in December or January, says Joe Aibinder, director of AT&T's voice over IP business

VoIP enhancements for WorldCom

Customers are getting a series of enhancements that include:

- Support of VoIP for DSL customers.
- Local calling support in 34 markets.
- SIP firewall support.
- Service-level guarantees.

WorldCom is expanding its SIP support by offering customers SIP firewall support, which provides users extra security for their converged voice and data networks.

Customers have the option of connecting their existing PBX voice switches to the managed service or they can deploy SIP phones on each user's desktop. These phones connect directly to a user's preexisting LAN through a standard RJ-45 port. The SIP option lets customers eliminate the need for a costly PBX switch, Zipp says.

Each SIP phone costs between $350 and $400, although the carrier says it's in the process of testing and approving a SIP phone that costs about $200.

The service is available today for $300 per month for five telephone lines and up to $2,000 per month for 40 phone lines. Both packages include unlimited, local, domestic long-distance and data support. These prices do not include equipment or transport costs. Customers will pay an additional fee for their DSL, dedicated IP, frame relay or ATM connection. ■

services. AT&T's guarantee will differ because it will include a metric on jitter and will cover North America, Latin America and Western Europe. WorldCom's guarantee is for U.S. customers.

AT&T's managed service offerings also differ from WorldCom's because they are based on the International Telecommunications Union H.323 specification, where WorldCom's services are based on Session Initiation Protocol (SIP). SIP is believed to offer users faster call completion and termination.

AMD

AMD me.

Convergence

decision every other new VoIP user confronts: Whether to do it yourself, outsource it or do a little of each. The usual arguments about cost, staffing and network ownership come into play with VoIP as they do with any other network technology that might be outsourced, but there also are issues unique to VoIP that can affect the decision. Such factors include the lack of staff trained on voice and data technologies, and the need to keep a particularly sharp eye on bandwidth usage given the sensitive nature of voice traffic.

Among those opting for an in-house approach is the El Monte Union High School District near

Los Angeles. The district installed a Mitel IP PBX to handle 500-plus phones in 10 facilities connected by a Gigabit Ethernet metropolitan-area network (MAN). The phones use a single dialing plan and are managed from one site, with voice traffic confined to virtual LANs.

The school district decided against outsourcing after it had bad experiences with Pacific Bell Centrex service, says Garett McKay, director of technology for the city of El Monte.

"We were dealing with a lot of problems in getting our carrier to

respond in a timely fashion," McKay says of the Centrex service. The district already had dumped Pacific Bell's Centrex service in favor of Toshiba telephone key systems in each school, but they weren't ideal in that they required site visits to maintain.

McKay hasn't ruled out using a managed VoIP service at some point, noting that he hasn't had any complaints about PacBell's handling of the Gigabit MAN.

"That might make sense," McKay says, "since our routers [JDS Uniphase boxes, owned by Pacific Bell] are located at PacBell's [central office] anyway. I could see some efficiencies if they just managed our phone switches from those locations as well."

Another VoIP user, Rogers Group, cites a need for direct control over bandwidth as a top reason for not outsourcing. The Nashville, Tenn., crushed stone maker wants to ensure it can adjust bandwidth allotments for voice as it crosses the company's frame relay network among sites in five states. The company's WAN service is already shaky enough when it comes to handling data, says Mark Eckstein, a network administrator.

"We deal with many carriers that say they can offer service guarantees …but often they're not willing to put teeth into their contracts," he says. "Our phone service is vital, and I don't think we want to put that in someone else's hands."

Rogers, which is making the shift to IP to save on toll calls among sites, hasn't determined what gear it will use, although it is considering installing VoIP gateways to its Nortel PBXs or going to another vendor for an IP PBX. "We're still debating whether to go with a pure-IP system," Eckstein says.

Just a little help

Some companies want to do most of the work themselves, though not the initial effort. The Royal Society for the Prevention of Cruelty to Animals (RSPCA) in England relied heavily on Cable & Wireless when it shifted from traditional voice to IP voice when it moved to new headquarters last year.

The RSPCA has installed Cisco VoIP gear at its central headquarters and a regional headquarters totaling more than 450 phones, and plans to extend the converged network to 47 other sites. In setting up the first two VoIP sites, the agency saved more than $100,000 by eliminating separate

In or out?

Factors to weigh about whether to outsource or build your own IP voice network:

	Pros	Cons
In-house	• Gain or retain control of the network. • Telecom and data staff get cross-training.	• Requires hiring experts or training. • Can cause data/telecom rift in staff. • Capital expenditure required.
Out-source	• No hiring or training needed to gain expertise. • Predictable costs. • May blend with existing managed data services.	• Loss of control. • Upgrades to new features on provider's timetable.

wiring for phones and another $400,000-plus because the IP PBX cost less than a traditional one, says Matt Winckless, technical communications manager. "We [just] needed help with the design and installation," he says.

Winckless says the RSPCA's IT staff of 30 can handle the ongoing management and likes the control that gives it for adding new features. When response to an RSPCA animal rights campaign flooded the agency's call agents, his staff was able to quickly create an interactive voice response option to go to recorded campaign information rather than to a live agent. It was done faster in-house than it would have been by a service provider, he says.

"We can engineer our own solutions as users come to us with new requirements," Winckless says.

Having a more hands-on approach also can smooth VoIP acceptance, Winckless says. Some users are reluctant to use new features and need to be eased into the new phone system. "The technology was the easy part. It's get-

ting the users used to the applications that's hard."

Encorp, which makes switches for generators, also is handling its VoIP system internally. A prime reason for doing so is that it just doesn't appear to be all that tricky for IT staffers already familiar with network technologies, says Stan Seago, the Windsork, Colo., company's IT director.

"If they know networking, they're already up to speed. You just program the switch and assign IP addresses," he says. "If they're all on the same [virtual LAN], you don't even do the IP addresses; [Dynamic Host Configuration Protocol] does it for you."

Encorp initially ran VoIP over an 802.11b wireless LAN across four buildings, but upon relocating to a single building moved to a 150-user IP voice network anchored by an Alcatel 4400 IP PBX.

Because most VoIP installations are still relatively new and there are relatively few experienced colleagues with whom to consult, users acknowledge that making the decision to outsource or not is difficult and that it still might be a while until they know whether they did the right thing. "[As for the] potential benefits, we're not really going to know until a year from now," Concordia's Heinemann says.

Next week, we look at SIP vs. H.323, two key convergence technologies. ■

Barrett

and [Resource Access Control Facility (RACF)]. Name your favorite security engine and we probably have it. So we have, like many companies, a great deal of difficulty trying to integrate all of those environments.

When you talk about identity outside the enterprise, how do you have to change your current authentication and authorization mechanisms to support the Liberty Alliance spec?

You have to make sure that the liability flow through the network is very well understood and very well managed at a contractual level. You need to know what the partnerships are within a particular island of trust, know who carries [the liability] under what circumstances, and essentially how that liability gets distributed among partners. That is where we will be very cautious in moving forward.

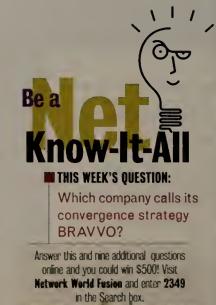**How many people internally are dedicated to identity management at American Express?**

Something like six to 10, but not all of them are full-time. The efforts are across the gamut from planning where to deploy this stuff to the public policy side.

Does identity management change the nature of the Internet as a business tool?

It is going to be a big change, but it is going to be a while before people look back and say, 'Golly that was pretty significant.' But at a practical level, all this nonsense of [how] you have to register and provide a user name and password [at every different Web site], all of that kind of incredibly tedious nonsense will just start fading away.

When do you see identity management taking off in the enterprise?

The day of magically arriving at a Web site and shoving in some username and password that is your sole global, unique username and password will arrive but it will be a number of years. Over the next few years we have to deal with some messy problems — what it takes to deploy technology, what it takes to bash out contracts between partners — but that is what we all get paid for. ■

" FOUNDRY NETWORKS IS EMERGING AS A STRONG ALTERNATIVE TO CISCO IN THE ENTERPRISE NETWORK INFRASTRUCTURE MARKET, AS DEMONSTRATED IN ITS PRODUCT SET, FINANCIAL RESULTS, AND ENTERPRISE STRATEGY."

Yankee Group Report:
Foundry Networks — A Strong Contender in the Enterprise
(August 2002)

Today's technology executives and network managers have never before been presented with so many challenges and opportunities. End-user expectations are sky-high, the pressure to constrain budgets is unrelenting, and decisions made today will be judged for their strategic value tomorrow. While the network infrastructure is only one portion of an information technology strategic plan, it plays an essential and foundational role in delivering value to the enterprise.

In a recent report by the Yankee Group, a prestigious research and consulting organization, Foundry Networks was evaluated against the needs of enterprises. The Yankee report offered two critical findings. First, they observed that "…customers need an alternative [to Cisco] for several reasons, including purchasing power, best-of-breed technology, and risk management." They further observed that "Foundry Networks is emerging as a strong alternative to Cisco in the enterprise network infrastructure market, as demonstrated in its product set, financial results and enterprise strategy."

This special insert provides a summary of the Yankee Group report and an in-depth view of Foundry Networks in the areas of product depth, financial viability, corporate mission, and global service and support. For a free copy of the Yankee Group report, please visit the Foundry Web site at:
www.foundrynetworks.com/solutions/enterprise/yankee.html

" The biggest benefit we've seen after putting in the Foundry gear is the improvement in performance. The delays in response time have all but disappeared in our applications. By putting in the Foundry gear we are now able to support an imaging application with a direct link to our local hospitals that will allow our physicians to review cases from our residence, like MRI's images and X rays, instead of having to travel across town to sign off on these cases."

Doug Fairful, IS Manager, KCMS

THE NEED FOR ALTERNATIVES The Yankee Group states categorically that "we believe in all technology segments there needs to be a number-two vendor." They go on to cite the following reasons:
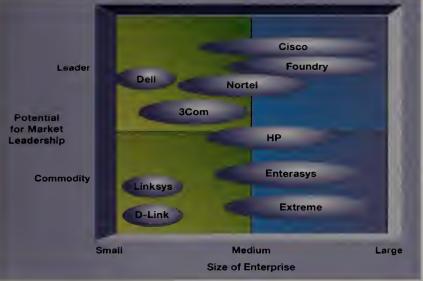
- **RISK MANAGEMENT** – avoiding single supplier point of failure
- **PURCHASING POWER** – a second vendor increases negotiating strength
- **BEST-OF-BREED SOLUTIONS** – the best solutions typically come from companies that specialize. The broad-based suppliers rarely have the best solution
- **NEED FOR LEADING EDGE TECHNOLOGY** – smaller, more nimble companies lead the innovation race, and offer better return on investment

FOUNDRY NETWORKS POSITIONED TO BECOME THE #2 ENTERPRISE VENDOR A summary of the Yankee Group's analysis of current network equipment vendors is shown in the following graphic. Their conclusion is based on the following strategic criteria:

PRODUCT DEPTH Foundry provides a complete suite of end-to-end switching and routing products enabling deployment of high-performance and high-availability networks for mission critical applications. Foundry's products provide the solutions needed for wiring closet and desktop aggregation, server and storage farms, advanced Web switching and load balancing, and voice over IP (VoIP).

The Foundry product offerings consist of BigIron® Layer 3 backbone switches, FastIron® enterprise switches, NetIron® MetroLink® routers, and ServerIron® Layer 4–7 Web switches. For enterprises, the FastIron product line includes modular and stackable switches to provide exactly the right sized solutions throughout an organization.

"I'd say that Foundry has made our networking life easier and we have a good assurance that all of the "illities"— the important things like reliability, maintainability, survivability and so forth are all there and met on a daily basis. The things that we can now do instead of worrying about the reliability or stability of the network is to look forward and say: "Well, what is it that we want to do with our networks? Where do we want to go?"

Richard Nelson
Director Of Information Processing
USC-Information Sciences Institute

" We needed a new
shared 10 Mbps at
in users, application
are experiencing. W
BigIron 8000 swit
that could support
as future initiatives
orative planning, V

Pat Montanaro
Division Chief, C
and Integration Di

Foundry Networks Is A Strong Contender In Large/Medium-Sized Enterprise
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All Foundry products share a consistent, easy-to-use, cohesive network management interface including a command line interface, a Web-based graphical user interface (GUI), and an SNMP management interface. Foundry's next generation IronView® network management platform allows network operators to manage the entire network from a central management station.

FINANCIAL VIABILITY Foundry Networks continues to maintain a solid financial position. Foundry has achieved 14 consecutive quarters of true profitability. The balance sheet remains debt-free with a positive cash flow from operations. Since its inception in 1996, Foundry Networks has proven its commitment to conservative financial practices.

LEADER IN INNOVATION The mission of Foundry Networks is performance and feature leadership for high-value, multi-layer switches including: LAN Switching, Metro & Internet Routing, and Layer 4–7 Traffic Management. The pursuit of this mission has been marked with a proven track record of breakthrough innovations, including:

1st Layer 3 Switch (1997, NetIron) • 1st Gigabit Ethernet Switch (1997, FastIron) • 1st Layer 4–7 Web Switch (1998, ServerIron) • 1st High-Performance Chassis Family (1999, BigIron) • 1st 10 Gigabit Ethernet Ready Modular System (1999, BigIron) • 1st 1000 BaseT (Gigabit over Copper) Switch (2000, FastIron GC) • 1st 10 Gigabit Ethernet Switch (2001, BigIron) • 1st ASIC-based sFlow: JetScope (2002, JetCore)

GLOBAL SERVICE AND SUPPORT

Foundry's world-class 24 x 7 x 365 technical support and worldwide systems engineering organizations help ensure that customers get the support they need to keep their mission-critical networks running at the highest performance levels.

Foundry has a sizeable service and support footprint worldwide. Systems engineers are present at all sales and services offices. Additionally, Foundry partners with local resellers and strategic systems integrators to sustain the coverage needed to help run an organization's network at one site or across the globe.

work architecture because our previous
itecture could not support the increase
and bandwidth requirements that we
t we wanted, and got with Foundry's
ing routers, was a network architecture
rent bandwidth requirements, as well
ch as desktop video conferencing, collab-
-Over-IP (VOIP), and VLANs."

mer Support, Systems Engineering
ion, Wright Patterson Air Force Base

" The high capacity and throughput of BigIron coupled with the same consistent quality and support we experienced in Foundry's stackable products, make BigIron close to perfect for our network."

Phil Kwan
Manager of Network Operations and Planning, Incyte Genomics

Foundry has Centers of Excellence in strategic cities around the globe. The Centers of Excellence locations are major customer training centers and regional support hubs. These facilities enhance Foundry's ability to deliver quality products and superior customer service to its growing global installed base.

THINK PERFORMANCE

TheYankee Group report concluded that **"Foundry Networks is a high-performance networking vendor that is a viable and strong alternative to Cisco, and in many cases the preferred vendor to Cisco."** Foundry Networks has the products your enterprise needs to meet the challenges of today and seize the opportunities of tomorrow.

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University of Washington
USC

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Chicago Board of Trade
Deutsche Bank
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>> Dear networking decision maker:

Since our founding in 1996, Foundry Networks has pursued the path of delivering technical excellence and innovation in networking. Our pursuit of this has always been focused on the real-world demands of bringing to market products that meet the present and future needs of our customers. More than ever, enterprise customers require and respect our ability to deliver end-to-end networking solutions that offer the industry's highest reliability, availability, scalability, manageability, performance, and port density—all from a financially strong organization.

Recently the Yankee Group, a prestigious technology consulting firm, published their analysis of networking infrastructure vendors and confirmed what our 4,600+ customers already know: Foundry Networks has the product depth and solution sets you need in order to leverage your network as a strategic asset. Our products and solutions give your network the technical performance demanded by your end-users while increasing the business and financial value of your organization—this is a competitive advantage that is crucial to your business.

In year 2002 so far, Foundry has garnered some impressive accomplishments. Along with our continued financial strength (fourteen quarters of true profitability), we:

- Increased our #1 market share position in three product categories as reported in the latest industry reports:
    - #1 in Layer 3 10-Gigabit Ethernet products
    - #1 in Layer 3 Modular 1-Gigabit Ethernet products
    - #1 in Layer 4-7 Modular Web Switches

- Launched a series of new products for enterprises including:
    - FastIron and BigIron enterprise modular switches based on our 3rd generation ASICs
    - JetScope "Always-on" total traffic monitoring (sFlow) capabilities
    - FastIron Edge Switches — a new breed of wiring closet switches

This special insert provides a summary of the Yankee Group report. In it, you can see for yourself how Foundry Networks can deliver *The Power of Performance* to your network and organization.

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CEO and President
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www.foundrynetworks.com

Infrastructure

HP, Cisco pump up 10G LAN gear

■ BY PHIL HOCHMUTH

Hewlett-Packard and Cisco recently released enterprise LAN gear targeted at corporations looking to roll out infrastructure upgrades such as 10G Ethernet backbones and IP telephony.

The introduction of 10 Gigabit HP gear also could be seen as a sign that the company is interested in competing with high-end switching companies such as Cisco, Extreme Networks, Foundry Networks and Nortel, which already have 10G Ethernet products on the market.

HP introduced seven modules for its Procurve Routing Switch 9300m, including an array of 10/100M bit/sec and Gigabit Ethernet options over copper and fiber, as well as a new single-port 10G Ethernet blade.

HP's new modules include an eight-port and 16-port Mini-Gigabit Interface Converter blades, and a 16-port module with

HP's switch push

HP introduced new blades for its Procurve 9300m chassis, including its first 10G Ethernet module.

Product	Price
Eight-port Mini-GBIC Redundant Management module	$15,880
16-port Mini-GBIC module	$20,240
16-port 100/1000-T module	$16,480
48-port 10/100-TX Telco module	$13,280
48-port 10/100-TX RJ-45 module	$11,980
Single-port 10G Ethernet module	$71,430
T-Flow Management module (J4879A)	$41,670

The Procurve 9315 switch

copper-based Fast Ethernet/Gigabit Ethernet ports. Also released was a 48-port blade for connecting end users with RJ-45 or telephone company connections, which let ports be tied directly to a patch panel. The new blades fit into 9300m chassis, which come with either four, eight or 15 slots.

A single-port 10G Ethernet blade can be used for connecting two 9300m series switches over a high-speed link, at distances up to 6.2 miles. Up to four 10G ports can be trunked together or provide a fault-tolerant, high-speed pipe between switches, HP says.

HP's 10G Ethernet modules are being used at Manchester Community College in Connecticut, where 10G Ethernet is used to connect two backbone 9300m switches together. The school plans to use 10G Ethernet to connect buildings throughout its campus in the future, says Thomas White-Hassler, dean of information resources and technology at the school.

While 10G Ethernet technology might only now be affordable for deep-pocketed companies and service providers, IDC says that will change, as 10G Ethernet port shipments are expected to grow from about 45,000 this year to more than

450,000 in 2006. Factors that will increase the 10G uptake include enterprise demand for more bandwidth to support applications such as voice and video, IDC says.

A price drop of about 78% for a 10G port, between now and 2006, won't hurt either.

HP also introduced its T-Flow management module, which has sFlow real-time traffic monitoring and accounting capabilities for monitoring traffic patters without degrading network performance.

The sFlow technology, which runs in hardware on the module, is based on HP's Extended Remote Monitoring sampling technology, which lets a switch management module monitor and provide statistics for every port on a switch without hindering performance on any port. This technology has been called an improvement to port monitoring or mirroring technologies, which cannot provide as broad a view of a switch's overall performance.

Meanwhile, Cisco released what it's calling a "compact" version of the Catalyst 6500, which comes with three slots. The chassis is aimed at wiring closet deployments in companies that want to standardize on the Catalyst 6500 family in the LAN core, aggregation and wiring closet levels. Cisco now has versions of the switch

Aventail releases SSL remote-access server

■ BY TIM GREENE

Aventail is introducing a Secure Sockets Layer remote-access appliance that gives customers the option to manage their SSL-based gear or outsource to Aventail.

The company is adding EX-1500, an appliance that customers can buy, install and manage themselves, without relying on Aventail to run the gear day to day. The company already offers a blend of services and managed equipment, but this addition is directed at users who want to maintain control of their remote-access networks, Aventail says.

"There was no option before to buy the product and run it yourself," says Mark Bouchard, an analyst with Meta Group. But in response to newer companies such as Aspellem Neoteris and SafeWeb that sell SSL remote-access servers that require no client software, Aventail was forced to respond, he says. "It's a simpler, easier model," he says.

Aventail says the new gear broadens user access options by offering connectivity via a separate remote client, a man-

aged remote-access service, a partially managed service and the equipment to do it yourself.

With the equipment, customers can authenticate to the EX-1500 from a Web browser and gain access to Web-based services within corporate networks. The connection is protected by SSL connections. Customers also can deploy an Aventail client on remote PCs, called Aventail complete VPN, that lets them access many non-Web applications via the EX-1500.

The device is designed for companies that might have directories of users and their network rights already. EX-1500 supports these directories, letting users authenticate to them and have the directories assign policies to them.

EX-1500 will be available in the first quarter of 2003, and the price ranges from $20,000 to $60,000. ■

Short Takes

■ **EMC** last week introduced the second in a line of midrange Clariion Fibre Channel arrays for midsize companies and branch offices. The **Clariion CX400** is a 2G-bit/sec Fibre Channel array with an upward capacity of 4.3 terabytes. It is one-fourth as large as the CX600 EMC announced last month and larger than the third member of the family, the CX200, which EMC has not yet announced. The CX400 competes against IBM's FAStT500 Storage Server, Hewlett-Packard's Storage-Works MA8000 and Sun's StorEdge 3910. EMC says that it's not only faster than these arrays, but also costs less. It uses dual Intel controllers running at 800 MHz and can be upgraded to a CX600 with the addition of a Disk Array Enclosure. The CX400 with 180G bytes of capacity and Navisphere software is $66,000. The product is available now from EMC, Dell, Unisys and Fujitsu, among other vendors. www.emc.com

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Gigabit to the desktop: A decision you can't escape

Back in the good old days, when IT capital spending dollars were free flowing, most network executives seized the opportunity to migrate their LANs to high-performance Layer 2/Layer 3 LAN switches. Thanks to that, they've got a glut of bandwidth on campus and likely a fairly happy bunch of users. So who says that you have to decide about Gigabit to the desktop now? Dell and Intel, that's who (with Hewlett-Packard and IBM thinking the same way).

Both companies are pushing Gigabit Ethernet for desktop machines in a big way. Intel, already one of the top Ethernet network interface card providers, now offers a LAN on Motherboard (LOM) implementation of Gigabit Ethernet.

Intel is displacing 3Com as Dell's LOM provider, and Dell is moving full-speed ahead to make every corporate desktop it sells a 10/100/1,000M bit/sec Gigabit Ethernet-capable computer.

The following is a direct and complete quote from Dell's Gigabit Ethernet frequently-asked-questions document answering the question, "Will ALL Dell systems switch over to Gigabit Ethernet? Answer: "Starting in mid-CY02, all NEW Dell OptiPlex and Dell Precision (not Dimension) Pentium 4-based systems will have Gigabit LOM. (Value systems will have Intel 10/100 LOM) In the future, we expect that all new systems will have Gigabit LOM as a standard feature." (See www.nwfusion.com, DocFinder: 2636.)

With more and more of your desktops Gigabit-enabled, there will be increasing pressure from users and management to use that bandwidth. Your LAN switch vendors would love to see you replace all your Fast Ethernet client ports with Gigabit over copper ports.

And, as I've written over the years, going

to gig is not just the same no-brainer as was the Ethernet to Fast Ethernet migration. Research conducted at The Tolly Group as part of a recent in-depth ITclarity report on Gigabit Ethernet to the desktop has confirmed the importance of the myriad technology issues.

For starters, network architects need to powwow with their PC brethren to reach an agreement on both PCI-bus specifications and CPU power. Both have an effect on the performance levels you'll be able to achieve.

Previously, network specialists have not had to delve into issues such as bus width, clock speed and next-generation standards such as PCI-X — but Gigabit Ethernet migration revolves around them.

With LOM being standard for the Dells, you wonder if the network manager even will know about the desktop transition to Gigabit until the users start asking for Gigabit switch ports. This could be an interesting turf battle.

I've written previously that copper cable infrastructure is a big issue — apparently

not to Dell. In this same useful FAQ, Dell states unequivocally: "Gigabit networking will work with most existing Category 5 Ethernet wiring, provided that all of the conductors are connected." Not a mention of Cat 5e or Cat 6 anywhere.

Let's pause a moment while the cabling vendors reading this column seek some medical help. I'm sure they gasped when they read Dell's statement. Technically, a certified Cat 5e is the lowest level recommended for Gigabit Ethernet — with Cat 6 being preferred.

Given the massive installed base of less-than-Cat5e, this is a big issue — and one that we evaluated. To our surprise, some experiments run on subpar cabling would appear to support Dell's assertion.

So not that your to-do list isn't long enough already, but you'd better add "research Gigabit to the desktop" to it.

Tolly is president of The Tolly Group, a strategic consulting and independent testing company in Manasquan, N.J. He can be reached at ktolly@tolly.com.

IBM lets users divvy up Unix servers

HP

■ **BY ASHLEE VANCE**

IBM last week provided more details on the latest version of its Unix operating system, touting the addition of mainframe-class technology that could give users more control over their servers.

IBM will start shipping Version 5.2 of AIX 5L by mid-October, offering it as an option, alongside the previous version, on the company's pSeries servers. The new version of AIX includes a host of features IBM had promised to its users with dynamic partitioning — the ability to make many "virtual" servers — being one of the most notable additions, says Karl Freund, vice president of IBM's e Server pSeries products.

The release also will bring improved clustering technology and improved management software that should reassure users of IBM's commitment to the operating system, according to an analyst.

"There has been a lot of talk that [IBM's] emphasis on Linux was going to de-emphasize AIX," says Bill Moran, research director at D.H. Brown and Associates. "This release should contain those rumors. They are adding a lot of new features and are clearly investing in AIX."

With Version 5.2, IBM has shown that it can match some of the technology found in competing operating systems from Hewlett-Packard and Sun, which top D.H. Brown's Unix operating system rankings, Moran says. IBM, HP and Sun all compete in the market for powerful Unix servers that run a range of applications from specialized scientific software to Web serving systems. HP and Sun have made major revisions to their flavors of Unix called

HP-UX and Solaris, respectively.

IBM has added dynamic partitioning tools to AIX that could give the vendor an advantage over its rivals and provide customers with a way to consolidate their workloads. Users now can run multiple

> **❝ In the mainframe, partitioning took years to be fully embraced, but there really is no longer any doubt about the technology. ❞**
>
> **Richard Partridge**
> Vice president of enterprise servers,
> D.H. Brown and Associates

copies of the operating system on one physical server and control processor, memory and bandwidth resources across each of these partitions. If a user wants to free more processor power for a particular application, the administrator can pull capacity from other software, while the server is still running.

By running a number of applications in different partitions, customers also can use one server instead of many for certain tasks, Freund says. IBM lets users create a logical partition (LPAR) that can run one processor and 250M bytes of memory.

This technology has trickled down from IBM's mainframe systems and will be picked up by Unix users willing to give it a chance, says Richard Partridge, vice president of enterprise servers at D.H. Brown.

"In the mainframes, partitioning took

years to be fully embraced, but there really is no longer any doubt about the technology," Partridge says. "Those customers who have mainframe LPAR experience may well be willing to give IBM a chance to show their Unix LPARs are cut from the same cloth."

The vendors emphasize different approaches to partitioning, with IBM and HP slicing up servers into the most sections, and Sun and HP offering hardware-based barriers between partitions for security.

Also in AIX 5L Version 5.2, IBM has followed Hp's lead with Capacity Upgrade on Demand technology that activates a spare processor if the server detects a failure. Users also can turn on spare processors in a server for added horsepower but only pay for the new processors at the time of activation, not when they purchase the server.

IBM in December will release the Cluster Systems Management (CSM) product for working with clusters of servers running AIX 5L Version 5.2 and Linux. The CSM software lets a user manage hundreds of servers from one console, Freund says. IBM also released an updated AIX Toolbox product for running Linux applications on AIX, new features for its AIX Workload Manager software and tuned storage management tools.

Vance is a correspondent with the IDG News Service's San Francisco bureau.

Servers
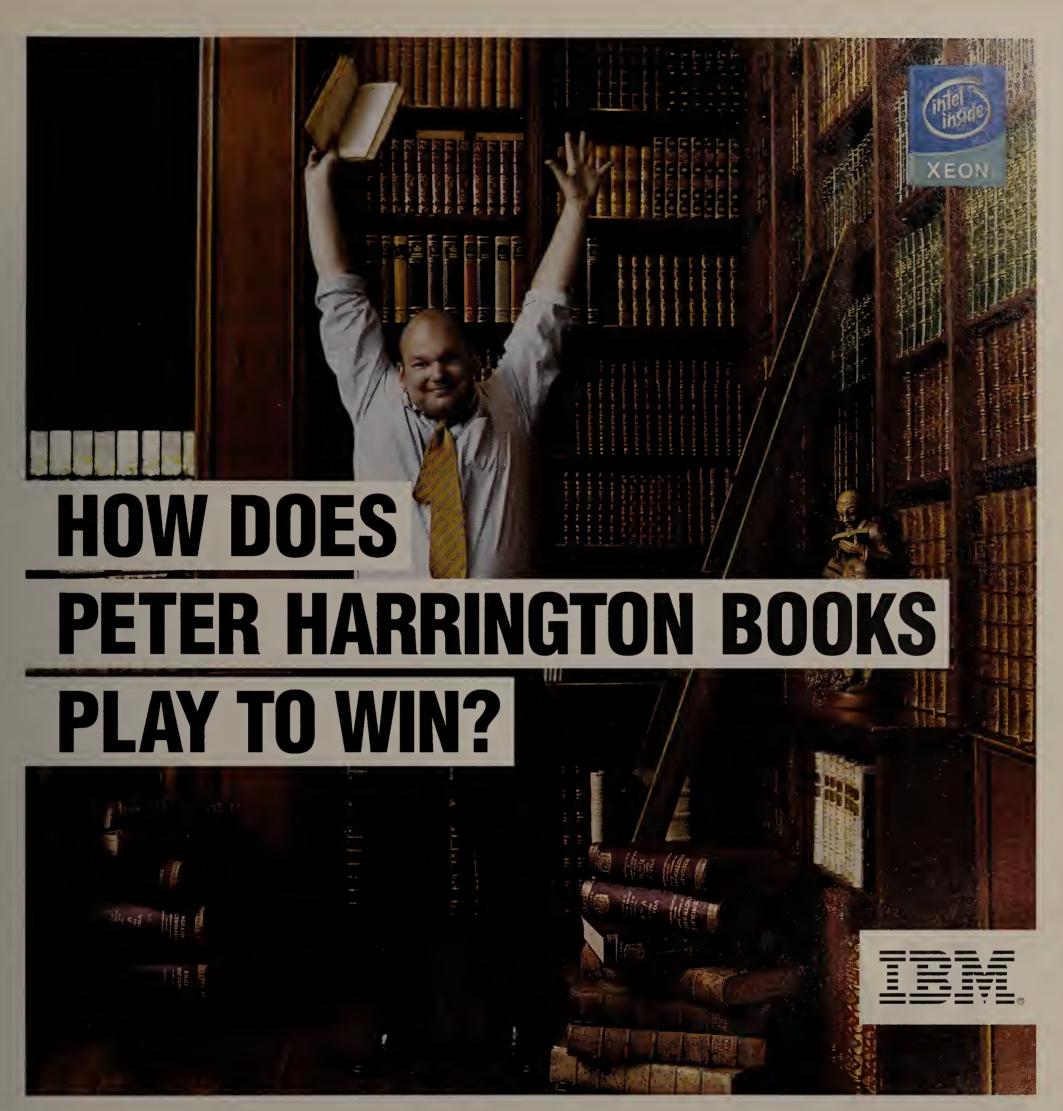Subscribe to our free newsletter.
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with three, six, nine and 16 slots. Cisco says businesses that standardize on one switch line across the entire LAN can save money by not having to purchase spare components for disparate devices.

Price rollbacks?

10G Ethernet currently costs about $35,300 per port, but IDC expects the technology to cost about $4,500 by 2006.

Cisco also added a 48-port 10/100 line card for the Catalyst 6500 line that is based on the pending 802.3af standard for delivering power over Ethernet connections. Cisco previously offered a proprietary version of power over Ethernet, which observers say was not in line with the standard. A daughtercard added to the module will let power be delivered over all 48 10/100 ports to any 802.3af-compliant device. A telco connection version of the blade is also available.

The HP and Cisco 10 Gigabit announcements and standard-compliant in-line power support, respectively, could be seen as attempts to elevate each company's infrastructure products in the minds of enterprise customers, as commodity vendors of LAN gear, such as Dell, Netgear and others, move into the enterprise market. All of HP's new switch modules are available now. (See chart for pricing.) The Cisco Catalyst 6503 chassis is available now for $3,000, and the 48-port 10/100 blade is available for $6,000. The in-line power daughtercard for the module is available now for $1,500. ■

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Special Focus

VPNs: Protecting networked assets.

Evaluating VPN security alternatives

■ BY TIM GREENE

Users looking for a fast, secure way to link remote employees and business partners are finding myriad choices to avoid deploying traditional IP Security-based VPNs and instead install products or services based on Secure Sockets Layer technology.

Whether SSL is an actual replacement for IP Security isn't really up for debate, experts say, because SSL is clearly a good supplement to IPSec for remote access. Rather, the question becomes: How do you go about evaluating which SSL remote-access alternative will fit your particular needs?

The place to start, say experts and businesses using SSL equipment, is figuring out what your needs are. If you have a small number of end users who just need to access Web-based applications or applications with Web interfaces, most SSL products will do.

If you have thousands of end users and they need to access client-server applications that have no Web interface, then choose more carefully, users and experts say. And depending on how demanding your need for full access to network resources, you might need to go with an IPSec VPN after all.

The players

There are plenty of SSL alternatives from which to choose: Netilla, Neoteris, Aventail, Rainbow Technologies, OpenReach, Ingrian, Aspelle, SafeWeb — to mention a few Despite the choices, the total sales of this type of equipment for the last quarter was only $5 million, according to Infonetics Research. But Gartner projects that by 2004, 60% of corporate users will use SSL for remote access at least some of the time.

These SSL alternatives are attractive because they require no remote client other than the standard Web browser that already is loaded on the PC, thereby eliminating the need to install, manage and maintain client software. The idea is that SSL's simplicity translates into an easier installation and long-term cost savings because of simpler ongoing support.

But the browser and its SSL capabilities only allow access to Web-based applications. While these applications and Web interfaces for legacy applications are becoming more prevalent, they are not ubiquitous. Customers who want to access these other applications cannot do so with just a browser.

So to get around this problem, SSL remote-access vendors write interfaces between these applications and SSL. In some cases, this requires loading an SSL client on the remote machine to perform this integration. Aventail, one of the oldest vendors specializing in this technology, has built a bank of non-Web applications it supports via its Connect client.

Others, such as Neoteris, send down Java applets that run as a local proxy between the application client on the remote PC and SSL. This might require users to make sure the SSL remote-access vendor supports the Java machine software on their remote PCs. If not, the applet clients won't work.

Check Point Software and Nortel, two major IPSec vendors, recently announced entry into SSL remote access, and it will take them awhile to catch up, says David Thompson, an analyst with Meta Group.

It will take another year for his company to develop support for a breadth of non-Web applications, says Mark Tuomenoksa, chairman of OpenReach, another IPSec VPN provider that now also supports SSL remote access.

Downloading these applets takes time that can delay a remote-access session and also delay individual SSL exchanges once the applet is running, Tuomenoksa says. "Reverse proxying takes up a lot of computing power," but as PCs become more powerful, this will become less noticeable, he says.

Managing clients

Some users don't mind adding an SSL-proxy client to their remote machines if someone else manages them. Deloitte Consulting in Atlanta uses Aventail's SSL managed service because it enables remote access to legacy applications without Deloitte having to distribute, update and manage the clients, says Larry Quinlan, the firm's CIO. Deloitte also uses Aventail's clientless remote-access service because sometimes its consultants borrow machines at their customers' sites, he says. SSL is not only on these machines already, but it lets the consultants send traffic through the customers' firewalls without having to reconfigure them.

Also, because Deloitte relies so heavily on the technol-

ogy — it has no other remote-access system — the firm wants a provider that will make sure it keeps running, Quinlan says.

Beyond applications support, customers might demand strong authentication of users accessing corporate networks via SSL. SecureSoft Systems, a medical care software application provider in Laguna Hills, Calif., says security is critical because its customers access medical records that federal requirements demand be kept confidential. SecureSoft already used SSL extensively and used Rainbow Technologies gear to accelerate SSL processing, but still needed stringent authentication, says Christopher Berlandier, SecureSoft's CEO.

When Rainbow combined its SSL proxying gear with its iKey authentication token, SecureSoft found what it needed to protect was the privacy of medical data between SecureSoft and its clients, Berlandier says. "The end user doesn't have to set anything up. We send the iKey and we no longer have to worry about user names and passwords," he says.

Authentication methods

Vendors offer a range of authentication methods from username and password to tokens, and some are working on biometric security schemes. Because of the ubiquity of SSL on browsers, customers should be sure they use a strong authentication method, according to consultant Kent Dallas. He says that, at a minimum, users should create strong passwords.

Meta Group's Thompson says customers should find out how many simultaneous SSL sessions vendors support. Vendors say their devices support thousands to tens of thousands of sessions, and potential customers need to make sure they buy a box with enough horsepower. They also should check what the vendor means when it quotes a session. For some, a session is a remote-user session with an application that is protected by SSL, which might consist of several individual SSL sessions. For others, it might be the number of SSL sessions that are up at any given time, regardless of how many users are supported. The second method gives a higher count.

While there seems to be developing interest in SSL for remote access, there is also a glut of vendors, Thompson says, which will be thinned out as some get bought by larger vendors and some fold. That means the stability of the company should be a consideration for users.

"Do they have money? Are they making any money? You need to ask," Deloitte's Quinlan says.

The market is too young to rank the leaders yet, says Jeff Wilson, a research director at Infonetics.

Thompson says that new SSL remote-access vendors will crop up for the next six to 12 months before the weeding out process starts and some of them are bought or fold. ■

Thinking about SSL?

Ask yourself these questions before you are lured into trying SSL-based remote-access schemes.

Applications:	Does the vendor support non-Web applications you need to access?
Client:	Does non-Web access require full client software or is a client-equivalent delivered session by session via Java or some equivalent?
Security:	Does the vendor take advantage of SSL capability to limit what resources users are authorized to see even more tightly than IPSec?
Authorization:	Can the product tap existing directories and servers to authenticate users rather than relying on separate lists?
Scaling:	Does the gear handle enough SSL sessions at a time to meet your users' demand?
Management:	Will the vendor manage and maintain your SSL gear as a service?
Stability:	Is the vendor financially stable enough to be around long-term?

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■ PRODUCTS, SERVICES AND STRATEGIES
FOR TYING TELEWORKERS TO THE ENTERPRISE

Returning to work for the disabled, ill

Employees facing physical challenges find comfort and productivity in telework.

■ BY JEFF ZBAR

The corporate office was no place for Judy Johnson to work.

With lupus, rheumatoid arthritis and a bum hip requiring a sixth corrective operation, just getting dressed in the morning was an ordeal for the 59-year-old. Add to that the prospect of a 45-mile commute to her Minneapolis office, long hours spent sitting at a desk and the commute home. Johnson was exhausted just thinking about it.

An office job? "I can't walk more than a block or two," she says. "The fatigue would wear me down before the start of the day."

But Johnson doesn't have to work that way. Instead, she works part-time from her Farmington, Minn., home as a secretary for the Midwest Institute for Telecommuting Education (MITE), a nonprofit telework consultancy. Johnson performs data entry, handles customer response and marketing distribution for a few hours at a stretch.

"I can work part of the day, rest and go back to [work]," she says. "That way I can deal with my health."

Telework has emerged as a viable workplace alternative for the chronically disabled — those people like Johnson who can work, just not from a corporate office. Human resources managers for companies with disabled workers — and network executives looking to hire from a broader IT talent pool — must consider how telework fits their employment scenario. As with able-bodied workers, telework can help companies attract and retain the best and brightest from the workforce, says Jane Anderson, director of MITE.

"When it comes to retaining talent, companies are willing to try this," she adds. "It really meets a business need."

Impending crisis

Employing the disabled is more than a workplace issue. It could forestall an impending national crisis, says Leonard Felman, principal with Expediter Corporation, a Pittsburgh return-to-work and vocational rehabilitation program.

In 1990, 6 million Americans were on Social Security disability. Today, the number tops 9.7 million — with a younger population drawing much of those funds and providing no tax revenue in return, Felman says. The disability trust fund is forecast to be insolvent by 2008, he says.

With such dire projections, in 1999 Congress created the Work Incentives Improvement Act and the Ticket to Work program. Using a combination of telework, alternative office spaces, sanctions and incentives, it aimed to encourage and train disability beneficiaries to return to work.

Incentives include vocational services from groups such as Expediter, and the Trial Period of Work, which lets a new worker continue to collect disability benefits for a year after starting a new job. Workers also can retain Medicare coverage for up to eight-and-a-half years after returning to work, say Dan Heit, president of Expediter. Administered on a state level, the program will be in place in 33 states by November. See www.ssa.gov/work for details.

Efforts to get disabled people back to work have jibed with the growth of technologies that help people to work from home. Thousands of quadriplegics work from home using voice-recognition software, writing tablets and improved phone systems to function from a home-based work setting.

"With technology, they can do their work, control their environment, change temperature, unlock the door, adjust the lights," Felman says.

ADA and home work

Some 70% of the disabilities affecting workers today are chronic medical conditions, such as multiple sclerosis, asthma or breathing problems, heart disease — all of which result in limited mobility or increased fatigue, Anderson says.

But few employers consider telework as a viable workplace alternative. That attitude can lead to trouble, says Chuck Knapp, a partner in the employment law group of Faegre & Benson.

Equal Employment Opportunity Commission regulations mention working from home as an option for some employees. And under the Americans with Disabilities Act, a disabled employee must ask the company about telework if in-office work is not feasible. The employer must consider the option, assuming telework would place no "undue hardship" on the company and that the job can be performed remotely.

"The act can be a briar patch," Knapp adds. "The only clear lesson from all of the cases is that employers need to consider telework as a reasonable accommodation for employees who need it."

Getting employees back to work — even at home — can improve business performance and even a worker's long-term health, Anderson says. Johnson's disabilities were draining her spirits. Feeling unproductive, unemployment sapped her self-esteem, which exacerbated her condition.

"Returning to work enables me to feel productive," she says. "The work lets me focus on something else and forget about the pain." ■

New ways to work

When setting up a telework program for the disabled, you need to be creative, says Jane Anderson, director of the Midwest Institute for Telecommuting Education, a nonprofit telework consultancy. Here are some points to consider:

● If telework doesn't fit, consider other flexible work arrangements such as reduced or compressed work weeks, or work at a telework center, to alleviate the employee's stress or long commute.

● Address each employee's medical symptoms individually. A worker with multiple sclerosis will have different needs than one with a respiratory illness or arthritis.

● Employers are prohibited from asking about an employee's health, unless performance is slipping and the cause must be addressed or the employee asks to telework as a "reasonable accommodation" for an illness.

● Consider letting disabled employees telework one day per week. Wednesday is best because it provides a midweek recharge.

● If the employer provides the employee ergonomic equipment in the office, then he must supply the employee with comparable equipment in the home office. The employer needn't pay for any physical changes to the home itself, though.

● As with any telework initiative, trial the new program for several months to see if it works. The Americans with Disabilities Act requires a "reasonable attempt at accommodation."

● Consult an employment law attorney to address your firm's specific situation.

TELEWORK BEAT
Toni Kistner

Telework by any other name is . . .

Let's turn over the floor to some industry colleagues who've been invaluable in helping me understand the sticky topic of telework. One issue that never stops nagging me has to do with the terminology. Every time I use "telework"— or choose "telecommute," "remote work" or "virtual work" over it — I'm just a bit uneasy. In one sense, they're all right. In another, not one is quite right. What do we need a special word for anyway when it's all just work? Then again, many overlapping terms create confusion and make it tough to get out the message of "alternative officing." Here's what some others think:

Jack Nilles, telework consultant: "This discussion has been going on for 29 years.

When I first came up with the terms 'telecommuting' and 'teleworking,' to shorten the term 'telecommunications-transportation tradeoff,' my colleagues and I spent hours debating which to use. Finally, telecommuting won because in the 1970s commuting was being replaced by infotech, and most urban workers could relate to the stresses of the daily commute. Since then teleworking has been the more popular term among employers because it emphasizes work. All these terms, and their variants, will eventually disappear. Then it'll just be back to work."

Dr. Wendell Joice, research psychologist for the Office of Governmentwide Policy, U.S. General Services Administration: "There have been great pronouncements that thou shalt use 'telework'…but still folks argue. Some Feds use the term 'flexiplace,' the media and Congress often use 'telecommuting,' and lay people often settle for 'work-at-home.' Some of my erstwhile and optimistic colleagues believe that the establishment of a standard term will cause

great, wondrous and magical things to happen. Unfortunately, I do not share such comfort with the alleged power of a semantic solution!"

Gil Gordon, telework consultant and author of "Turn It Off": "I'm starting to think that the sooner we start allowing telework as a separate term and concept to fade into the sunset, the better off we'll all be. So long as we identify telework as something special, unique and different, the longer that novel terminology will breed skepticism. Why is it that nobody asks the same questions of field salesforces or other long-standing nonoffice-workers? I suspect it is the change from 'work' to 'telework' rather than telework itself that causes all the aggravation. Maybe if we drop the term we'll lose the aggravation."

Susan Tierney, the marketing coordinator at Valley Metro in Phoenix: "By placing labels on remote work it somehow separates it from work at the office and connotes that telework is less than work."

Imogen Bertin of the U.K.'s Telework As-

sociation: "There is nothing wrong with the term 'teleworking' and I am highly suspicious of attempts to replace it with yet more jargon (such as e-working, which the European Commission favors).

"In the U.K. there was the famous name change of the nuclear plant Windscale, where there had been a number of accidents. Now it's known as Sellafield but that doesn't fool anyone. The experience made a lot of people suspicious of anything that has to change its name."

Charlie Grantham, with the Institute for the Study of Distributed Work: "I prefer distributed work because it takes the emphasis off of technology. This is really about a new way of working in which teams are dispersed in time and space. Perhaps it's a bit academic and somewhat lacking in sex appeal; but it's what's really happening."

Kistner is the managing editor of the Net.Worker section. She can be reached at tkistner@nww.com.

Automated service gives home networkers a hand

■ **BY TONI KISTNER**

AUSTIN, TEXAS — It happens all too often. You buy a home network kit from a retailer or broadband service provider confident you can set it up yourself, only to hit a brick wall. You work with technology every day, follow the quick start guide and pore over the manual. No matter. You can't see computers, get online, share files or add a printer. Instead of calling tech support, wouldn't it be great if a technician could see inside your system and tell you what's wrong so you could fix it yourself?

That's just what Motive Communications has in mind. The software company recently announced its Home Networking Service Solution, an automated service and support product for home networks. Geared to hardware vendors, service providers and warranty companies, the client server application includes a diagnostic engine and remote access and control features. Install the software client on the PC, and when you have a problem, click on the icon in the system tray to launch the program.

Clicking the "troubleshoot" button launches the diagnostic tool, which checks PCs, modem and router, and returns the cause of the problem and the fix. If the user doesn't make the recommended configuration changes, he can launch a service session, which will connect him with a support

technician. The system will open a chat session so the customer and tech can communicate back and forth to solve the problem, and the support tech can push down settings to change the system configuration automatically.

Privacy is protected because all actions the support tech performs are permissions-based. The end user must permit tests to be run on the system and for data to be sent to the tech. At no point can anyone on the vendor or provider side gain access to the user's endpoint. At no point can anyone on the vendor or provider side gain access to the user's endpoint, says Ben Geller, Motive's marketing manager, communications.

"Since we're transitioning from early adopter to early majority, home networks have to be really easy to set up," Geller says. "Service providers need to sell a product that handles everything from setting up service and troubleshooting to managing service on an

ongoing basis. Most right now are charging a monthly fee for the connection only; calls to tech support are often billed by the minute. But each time the customer calls, support isn't equipped to answer questions, so most calls take 20 to 30 minutes. That adds up fast."

Companies including 3Com, EarthLink, Fujitsu and Merrill Lynch have used Motive's Service-Net Platform to build customer support services since 1997. Motive's most recent product, launched last December, guides

users through broadband provisioning and modem installations. Customers include Verizon, AT&T Broadband, Bell Canada, British Telecom and others not yet announced. Recently, providers Verizon, BT Openworld and Telewest and cable modem vendor Westell have announced plans to offer the service.

Motive counts the Warranty Company of America (WCA) as one of its biggest customers. The extended warranty provider processes tens of thousands of service requests per month on every-

thing from PCs to lawn and garden equipment to homes. "Because most PC users can't tell you what's wrong with their computer, we'd wind up sending a truck," says Linda Gottschalk, WCA's vice president of marketing. "Yet, we found 90% of the problems were software-, not hardware-, related."

To reduce the number of truck rolls, WCA worked with its whitebox PC clients to put the product on each computer it sells. "We reduced the number of truck rolls by 75%, just in the first quarter," Gottschalk says. ■

Toshiba debuts new notebooks

■ **BY TOM KRAZIT**

Toshiba last week announced two desktop replacement notebooks for home- and small-office workers who need occasional mobility.

The Satellite 1905-S303 uses a desktop 2.4GHz Pentium 4 processor from Intel and weighs 8.3 pounds, while the Satellite 1955-S803 is powered by a 2.5GHz Pentium 4 and weighs 9.6 pounds.

"These notebooks are designed for people who want to be mobile, but don't do it on a regular basis," says Oscar Koenders, a Toshiba vice president.

Toshiba's notebooks with desktop processors have come under fire by analysts and users for the excess heat generated by desktop processors. In a desktop chassis this heat is dissipated, but the smaller notebooks retain more heat, which can cause the processor to throttle back its clock speed or shut down altogether. Owners of Toshiba's Satellite 5005 series filed a class-action lawsuit against the company in August, charging Toshiba was aware the desktop processors would cause problems.

But the two new notebooks won't suffer the same fate, Koenders says. "These notebooks are larger than the 5005 series and include additional heat shields."

A sample configuration of the S303 with the 2.4GHz Pentium 4, 512M bytes of RAM, a 40G-byte hard drive, a 15-inch TFT LCD, ATI Technologies' Mobility Radeon graphics card, two USB ports and a DVD-ROM/CD-RW drive costs about $2,000.

The S803, with a 2.5GHz Pentium 4, 512M bytes of RAM, a 60G-byte hard drive, a 16-inch SXGA display, Nvidia's GeForce4 440 Go graphics card, three USB ports and a DVD-ROM/CD-RW drive, costs about $2,800. The S803 also comes with integrated 802.11b wireless connectivity, which lets Toshiba package a wireless keyboard and a wireless mouse with the notebook.

Both are available now through Toshiba's Web site or retail stores.

Krazit is a correspondent with IDG News Service's Boston bureau.

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Enterprise Applications

Short Takes

■ E-business software maker **Siebel Systems** is expanding its partnerships with **Hewlett-Packard** and **BEA Systems,** the company said last week. Siebel also released a version of its flagship relationship management software suite, Siebel 7.5, for HP's Unix operating system. Siebel's extended partnership with HP means customers can tap HP for services such as remote management of Siebel software deployments. The alliance builds on a partnership between Siebel and Compaq, which HP bought earlier this year. In a separate announcement, BEA said it will support Siebel's Universal Application Network integration architecture, which is intended to be a standards-based, vendor-independent package for application integration. Other Siebel partners supporting its Universal Application Network include IBM, SeeBeyond Technology, Tibco Software, webMethods and Vitria Technology.

■ **Network Associates** last week released its **Network Performance Orchestrator (nPO)** platform for centrally managing enterprise network performance and security. The company also announced **nPO Manager** and **nPO Visualizer.** NPO Manager is an appliance that can connect to Network Associates' Sniffer Distributed management appliances. The package provides centralized authentication, configuration management, profile management, resource management and alarm management. NPO Visualizer is an appliance that can be accessed via a Web browser and lets network managers generate more than 40 short- and long-term reports on network performance, bandwidth utilization, usage trends and top alarms. The two separate 2U (3.5 inches) rack-mountable boxes will be available in mid-November. NPO Manager costs $30,000, and pricing for nPO Visualizer starts at $40,000. www.nai.com

Entrieva gives voice to net mgmt.

■ BY CAROLYN DUFFY MARSAN

It's 3 a.m. and you get a telephone call that your company's network has gone down. Thanks to software from start-up Entrieva, you can diagnose and fix the network problem over the phone and then go back to sleep.

With software shipping for a year and several successful customer deployments, Entrieva is expanding its focus beyond network management to offer interactive voice access to other enterprise applications. Entrieva recently changed its name from Webversa to reflect its broader focus.

Entrieva is a 3-year-old venture-backed company selling software that provides interactive voice access to network management and other enterprise applications. Entrieva sells software that works with popular network management platforms including Computer Associates' Unicenter, IBM's Tivoli and Hewlett-Packard's OpenView along with trouble-ticketing software from Remedy.

When these network management systems report a problem, Entrieva's server-based software determines who the sub-ject-matter expert is, places a call to that person, verifies that person's voice and accepts that person's personal identification number. The expert then can query the network management system and

resolve network events with an ongoing voice dialogue. Entrieva's software lets network managers solve problems quickly via the telephone without having to come into the office on nights or weekends.

Behind Entrieva's software is support for two emerging standards that support so-called multimodal communications: Voice XML 2.0 and Speech Application Language Tags (SALT). Multimodal communications combine speech with more traditional I/O techniques such as text, audio, video or graphics.

VoiceXML is used primarily in telephony applications such as directory access, call routing and call centers. SALT focuses on speech-enabling Web pages for access by telephone users. VoiceXML and SALT are under development by the World Wide Web Consortium, a standards group.

Users of Entrieva's software say the underlying voice processing technology works well.

Entrieva's largest user is the U.S. Army's Military Traffic Management Command, which runs a network that links eight seaports around the globe to its headquarters at Fort Eustis in southern Virginia. The

PROFILE: ENTRIEVA

Location: Reston, Va.

Founded: 1999

President and CEO: Tom Lewis

Primary product: Server software that provides an interactive voice interface to network management applications.

Financing: Raised $10 million in two rounds of venture financing.

News: In August, purchased Semio, a content management software vendor. In September, changed name from Webversa to Entrieva.

Customers: 10 for Webversa products, 115 for Semio products.

Employees: 15

Ximian watches over Linux software

■ BY MATT BERGER

BOSTON — Linux software maker Ximian last week released a new version of its Red Carpet software management tool, which corporate customers can use to more easily deploy updates and security patches for Linux desktop and server software.

Called Red Carpet Enterprise, the product is the latest generation of Ximian's software for delivering updates and fixes to multiple servers and workstations. Red Carpet is available as a Web-based service for corporate customers, called Red Carpet Corporate Connect, and one for individual Linux users, called Red Carpet Express. Both let users download patches and version upgrades from servers hosted by the company.

With the corporate version of Red Carpet, customers can install the software management tool on their own servers, says Jon Perr, vice president of marketing for Ximian. Users also can manage the process

using a command-line interface in addition to the Web-based console available for existing versions of the tool.

Also new to the product, customers can manage version and security updates for custom Linux software developed by individual users, in addition to generally available software products already managed with the tool. Those include versions of the Linux operating system from Red Hat, MandrakeSoft, SuSE Linux, and the open source project Debian.

All versions of Red Carpet also include "channels" where users can get updates to third-party Linux software, such as Opera Software ASA's Web browser, Sun's StarOffice desktop suite and Ximian's Evolution e-mail and calendaring software.

Amerada Hess, an oil and gas company in Houston, uses Red Carpet Corporate Connect to manage software updates for 300 Red Hat Linux servers deployed in one of its U.S. divisions. Jeff Davis, senior systems programmer with Amerada Hess, says he has tested Ximian's new server-based prod-

uct and plans to roll it out in place of the current service next year.

"It works just like Corporate Connect. The only difference is that since the box is inside the firewall it's under [my] control," he says.

With control over the server, Davis says he can deploy hundreds of fixes at one time, whereas the version he has now requires him to schedule updates one at a time.

Similar tools are available from other companies. Red Hat offers a tool called Red Hat Network that lets its users keep current with security patches and updates. However, few tools let users manage updates for products from multiple vendors through a single interface.

Red Carpet Enterprise will cost $2,500 for the server software component and $200 for each server or workstation that is maintained with the software tool. Volume pricing will be available, the company says.

Berger is a correspondent with the IDG News Service's San Francisco bureau.

ArcSight centralizes problem mgmt.

Security information management software allows for automated responses to attacks.

■ BY ELLEN MESSMER

SUNNYVALE, CALIF.— ArcSight, a security information management software start-up, this week said its upgraded product will conduct event correlation and allow for some limited automated response to a network-based intrusion or attack.

ArcSight 2.0, expected to ship the end of the month, will correlate data from 50 types of equipment, including intrusion-detection systems (IDS) from Cisco, Enterasys Networks, Internet Security Systems (ISS), Tripwire and Intrusion, and correlate this with information obtained from firewalls such as those from Check Point Software, NetScreen Technologies and Nokia. The idea is that by centralizing data about events or alerts from multivendor products, which is what all SIM products do, managers get a better view of an ongoing threat.

"IDS by itself doesn't realize the target is vulnerable or not to an incoming attack," says Hugh Njemanze, CTO and co-founder of ArcSight.

ArcSight 2.0 includes SmartAgent software that collects output data from router and security equipment. This collected information is sent to a server called

ArcSight manager, which analyzes it to provide a security overview at the ArcSight workstation. The data is stored in a relational database.

ArcSight competes against a handful of other SIM start-ups, including netForensics and e-Security, while established security players such as Check Point, ISS and Symantec have taken steps to build competing SIM systems.

The first version of ArcSight could only collect data from a number of IDS, firewall and routers but not correlate it to provide an analyzed overview of a network threat.

ArcSight is introducing automation so that a customer could decide to have a policy to automate certain actions, such as launching the Tripwire host-based intrusion detection that can check to see if files, operating system or router configuration has been changed.

However, Njemanze says many customers are probably still gun-shy about automating security response because of falling prey to false alerts.

One ArcSight customer, Union Bank of California, uses ArcSight 1.0 to consolidate security-related information from several host-and network-based IDS, firewalls and Web server logs. Union Bank's vice presi-

dent of security, Bob Justus, says the bank is testing out ArcSight 2.0 to correlate events, such as whether there might be a visible relationship between a router noticing a port scan for a source IP address and a malformed packet being sent to a Web server in an attempt to disable it.

"ArcSight shows us how well all the layers of security are working together via a single console," Justus says. Union Bank is open to the idea of automating some security responses through ArcSight.

Pricing for ArcSight 2.0 costs $250,000. ArcSight: www.arcsight.com

Security gathering

In an effort to help users centralize security management, ArcSight 2.0 software can correlate alerts and alarms from more than 50 security devices.

1 ArcSight SmartAgents collect security management and status information from enterprise gear.

Security and intrusion-detection devices

Routers, communications gear

Servers

Server running ArcSight Event Manager software

2 ArcSight server collects and stores agent information, looks for trends and reports findings to browser on customer PC.

Browser

Database

Entrieva

command ships, receives and stores cargo at these ports and transfers it to other ships, trucks and trains. More than 600 desktops are hooked to the command's network, which uses CA's Unicenter as its network management platform.

Several months ago, the command integrated Entrieva's software with Unicenter to let network managers solve network problems remotely by telephone. The command already offered remote access to its network through a VPN, but it found that network managers didn't always have ready access to a PC when a problem arose.

"We had ways for our staff to come into the network via our VPN to do any kind of repair work or recovery work. But you're not always within reach of a workstation to do that," says Dennis Van Langen, director of information management field support for Military Traffic Management Command.

Van Langen says the command's network doesn't have network outage problems often, but

problems tend to arise at odd hours. Most problems are routine and can be fixed through predetermined procedures. That made it possible for the command to program Entrieva's software to handle these procedures by voice command.

"We, like most shops, are trying to keep our systems administration staffing levels to a minimum. So we're only talking about a few people that make use of this product," Van Langen says. "But we have found it helpful."

Van Langen says Entrieva's voice processing technology is "surprisingly good. I was pretty skeptical, but the voice recognition is pretty good, and the training time was minimal."

Military Traffic Management Command is so pleased with Entrieva's software that it added

an interactive voice interface to another of its enterprise applications: its situation reporting system. Now members of the command can call into a central reporting system from anywhere in the world and file a situation report via telephone with Entrieva's software.

> ❝ It's been a substantial improvement because it gives people access to information about what's going on with patients. ❞

Catherine Hamel
Senior vice president, Severn Healthcare Provider Services

"Voice interface technology has a lot of merit when you consider the ease of use and flexibility," Van Langen says. "It allows you to introduce a very sophisticated front end. Voice is great for getting across abstract concepts."

The Army isn't the only organization to add Entrieva's voice interface to enterprise applications other than network management for which the software originally was designed. Severn Healthcare Provider Services in

Columbia, Md., uses Entrieva's software to let its home-based caregivers file patient call reports from cell phones while on the road.

Severn's system walks caregivers through a menu of information that is entered by voice for each patent call report. The Entrieva software is integrated with Severn's Web-based patient care system, which is updated in real-time as the caregiver conveys new information about a patient. Severn's customers, who are managed care providers, instantly can access the latest patient call reports on the Web.

"The system has been working great," says Catherine Hamel, senior vice president at Severn. "It's been reliable, it's been consistent, and the information has been invaluable. We've cut the response time about whether home care should be continued by days. It's been a substantial improvement because it gives more people access to information about what's going on with patients."

Before using Entrieva's voice interface technology, Severn gave caregivers handheld systems to enter patient call reports

with a keypad.

"Our care providers wanted the voice interface," Hamel says. "It's easier for them to use cell phones."

Meanwhile, the Entrieva management team is looking beyond interactive voice to new security-oriented applications.

In August, Entrieva bought Semio, which sells content-categorization and indexing software for large databases. Semio's software crawls through unstructured data and extracts relevant information based on a predetermined taxonomy. The Semio software works with portal platforms from SAP and Plumtree.

Entrieva plans to bridge its Webversa and Semio product lines. Its goal is to offer a suite of products that will let users comb through large amounts of information for key words, and if those key words are found by the system, a voice-enabled alerting capability is triggered.

Entrieva's target market for its combined Webversa and Semio suite are government agencies and critical industries such as energy, chemicals and transportation that are beefing up their security efforts. ■

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'NET
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Bradner

The rest of peer-to-peer

Peer-to-peer networking has developed a very bad reputation in the last year or so, mostly because it's a term that has been applied to ad-hoc music distribution networks.

The music industry has attacked this use of peer-to-peer technology as the reason for the recent drop in the sales of music CDs. I don't suppose that continued high prices or a lack of music that people want to buy has anything to do with the drop.

There are many other uses of peer-to-peer networking that should not be overlooked in the fog created by the music industry's zeal to maintain outdated business models. One of these is grid computing.

About a year ago I wrote a column about grid computing (www.nwfusion. com, DocFinder: 2631) in which I argued that the hype that painted the grid as the "next phase of the Internet," as *The New York Times* put it, was overblown. I also said that distributed computing technology did have some significant uses, even if I didn't think it would be common for people to share their local computing resources with people they don't know. I still hold that view, but a recent visit to the iGrid 2002 conference showed me how far this type of peer-to-peer computing has come.

The conference was held in an extraordinarily well-connected science and technology center in Amsterdam. Connections included two 10G bit/sec links to the U.S. (New York and Chicago) and many 2.5G bit/sec connections to parts of The Netherlands and the rest of Europe. More than 400 attendees from 20 countries got to see more than two dozen live demonstrations and a full program of technology sessions. Most demonstrations were focused on the effective use of high-speed networks and distributed high-performance computing, with most of the rest focusing on the technology glue, such as a security infrastructure, needed to make this type of peer-to-peer computing workable.

The most emblematic demonstration was a real-time, interactive, 3-D work of art. "Art Flying In & Out of Space" by Jackie Matisee presents a collection of multicolored, long-tailed Japanese-style kites swaying in the wind. The work is presented in the CAVE, a walk-in virtual-reality environment where images are projected on the walls and floor. The viewer wears special glasses to provide a 3-D experience. What makes this work of art a grid demonstration is that the movement of each of the kites is calculated by a different computer, and the computers are spread all over the network. It's a beautiful personification of distributed computing.

The demonstrations showed that the grid technology is maturing. And with companies such as the two dozen sponsors of iGrid, including IBM and Hewlett-Packard, pushing it, the technology has a bright future. But it still will complement, not replace, the Internet as we know it.

Disclaimer: Historically, Harvard's schools provided a good example of loosely coupled distributed computing. Things seem to be changing, but whether it will replace Harvard as we know it will not be known for a while. Meanwhile, I express my own opinions.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@ sobco.com.

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WorldCom outage raises new doubts

■ BY DENISE PAPPALARDO

CLINTON, MISS. — WorldCom is not the first to see its Internet backbone buckle after suffering a network outage, but customers and analysts are concerned the carrier's nine-hour slowdown is an indication that more troubles lie ahead for the financially beleaguered company.

WorldCom's UUNET backbone slowed to a crawl Oct. 3 after a technician made a configuration change to operating system software that runs on some of the carrier's border routers. While WorldCom confirmed these facts, the carrier would not provide more details about the nature of the outage or how it fixed the problem.

One customer remains frustrated by the dearth of information coming from WorldCom, which filed for bankruptcy in July and has laid off 16,000 workers since.

"We got in contact with WorldCom early Thursday morning after noticing the network was sluggish. They disclosed they had a router or switch issue, but we've never been debriefed," says Greg August, CIO at the Cystic Fibrosis Foundation in Bethesda, Md., which runs a 50-site IP VPN over WorldCom's network. "We don't need them to waste time during the crisis, but some reports afterward would be helpful."

While August waits for WorldCom to explain the outage and what the carrier is doing to assure it does not happen again, he says he's concerned bigger problems are looming.

"The scary thing is that they could be losing control of some sites and that's why they haven't explained what happened," August says. "I doubt it, but I really don't know why they wouldn't come clean."

Latency across WorldCom's network was up around 900 msec and packet loss exceeded 22% during the carrier's outage, according to Matrix Network Systems, a company that monitors Internet performance for enterprise users. The Internet typically operates with about 50 msec of latency and about 0.05% packet loss, says Tom Ohlsson, vice president of marketing and business development at Matrix.
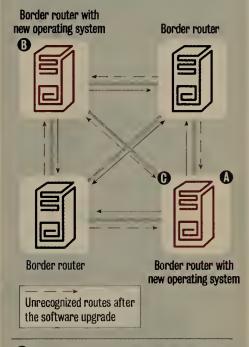
The packet loss and latency that WorldCom experienced during its outage wreaked havoc for some WorldCom customers. The World, a Boston ISP, lost all connectivity to the Internet for about three hours primarily because the ISP's main connection is through WorldCom.

"Other customers that were multihomed to five or six ISPs did not see the same types of outages, but only slowdowns," says Bill Palumbo, CEO at Matrix.

The faulty software that WorldCom uploaded to its border routers caused some routes between cities to completely disappear. This problem spread throughout

Bad directions

Although issuing few details, WorldCom says an operating system problem slowed its UUNET backbone to a crawl Oct. 3. A chain reaction involving faulty route tables hampered the carrier's ability to broadcast correct routes.

Border router with new operating system

Border router

Border router

Border router with new operating system

Unrecognized routes after the software upgrade

ⓐ 7:00 a.m. WorldCom technicians update some of the carrier's border routers with operating system software that later proved faulty.

ⓑ The software quickly creates a situation in which some routers are not recognizing certain routes on the Internet.

ⓒ When routes are not recognized, packets are lost or rerouted to other routers causing delays.

WorldCom's UUNET network in the U.S.

"This is not something we predicted because we thought WorldCom would have [been guarding] against a very

See WorldCom, page 38

Verizon outsourcing unit looking to make a name

■ BY JENNIFER MEARS

Magazine publisher Highlights for Children in Columbus, Ohio, was expanding rapidly and realized that it needed more IT support than it had in-house. So the company started searching for an outsourcer.

While Highlights President Elmer Meider won't name names, he says the major vendors were considered. The service provider that was selected, however, probably is not one that most network executives would immediately associate with IT outsourcing: Verizon IT.

Highlights has used Verizon IT to manage its mainframe, AS400 and RS6000 platforms, which handle subscription processing, order fulfillment and other tasks, for about four years. Meider says his company settled on Verizon IT because of the stable, secure infrastructure it could provide and its commitment to customer service.

"Once they had passed the test of our IS group telling us that they could deliver what we needed to be delivered, we felt comfortable," Meider says. "We have to have a comfort level with the philosophy

Who's outsourcing?

Large companies continue to spend the most on outsourcing, but the midmarket is growing fast.

Spending on IS outsourcing:
(in billions)

■ Large
■ Midsize
■ Small

$14.9 $21.3
$6.8 $11.0
$2.7 $3.2

2002   2006

Note: IDC defines the company size as follows: large — 10,000+ employees, midsize — 1,000 to 9,999 employees, small — 100 to 999 employees.
SOURCE: IDC

of the company and how they treat their customers."

That's what Verizon IT is hoping to hear
See Verizon IT, page 38

■ **SBC Communications** last week rolled out a T-1 integrated local voice, long-distance voice, data and Internet access offering. Users can choose between five options, including local voice, long-distance voice, dedicated Internet access, frame permanent virtual circuit for private intraenterprise connections, and a managed customer premises equipment service.

The service is available this month in SBC's Southwestern Bell and Pacific Bell territories. SBC's Ameritech and SNET customers are expected to get the service in December or January. The offering is targeted at customers with monthly per-site spending between $750 and $2,000.

■ **AT&T's** CEO-to-be David Dorman appointed **Betsy Bernard** as the company's president earlier this month. The appointment officially takes effect after AT&T Broadband's merger with Comcast is finalized, which is expected to happen by year-end. Bernard will head up the company's AT&T Business division. Bernard most recently held the position of president and CEO of AT&T Consumer, the company's residential long-distance division. John Polumbo will head up the AT&T Consumer division once Bernard's appointment becomes official. Polumbo is currently senior vice president of AT&T Business.

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EYE ON THE
CARRIERS
Johna Till
Johnson

ILECs are crying wolf over regulation

You hear a lot these days about the impact of unbundled network element-platform regulation on the telecom industry. Not only is UNE-P blamed for reducing the profits of the incumbent local exchange providers, it's now being blamed for contributing to the telecom slump by reducing the incumbent local exchange carriers' ability to purchase hardware and software.

A refresher: UNE-P is the Federal Communications Commission rule requiring ILECs to make their network facilities available to competitors at rates deter-mined by state public utility commissions. The ILECs maintain that the rates that the states set are unrealistically low and don't reflect the true cost of operating the networks. Thus, the argument goes, UNE-P amounts to forcing the ILECs to subsidize their competition at unfair prices.

Some folks agree. Two months ago, UBS Warburg issued a report indicating that BellSouth, Qwest, SBC Communications and Verizon are losing money because of UNE-P requirements in 18 states. As a result, UBS Warburg lowered its stock ratings on the ILECs from "buy" to "hold," indicating Warburg's belief that UNE-P requirements represent a liability to the ILECs.

Because the ILECs are losing money to UNE-P (goes this line of reasoning), they aren't making needed investment in infrastructure and operation support systems, which translates into lower revenue for telephone company hardware and soft-ware providers. So UNE-P is not only hurting the ILECs, but also it's damaging the industry as a whole, and any right-thinking mortal should be up in arms about it.

Forgive me if I disagree. I like the ILECs just fine, but I don't buy the argument that anything that's bad for Ma Bell is bad for the industry.

Let's take a closer look at the facts. First, the UBS Warburg study only looked at the residential market — a mature market by any account. Whether today or next year, ILECs are going to have to stop basing their profit projections on basic residential services and begin to focus on offering enhanced services and business offerings. UNE-P might accelerate that trend, but it's not causing it.

Second, the argument that UNE-P is depressing the earnings of telco hardware and software vendors just makes me laugh. Here's the problem: If the ILECs are going broke selling their facilities to competitive local exchange providers, one has to assume the CLECs actually are buying. So what are the CLECs doing with the money they're saving? Why, presumably purchasing hardware and software to make their networks more efficient.

And if they aren't, don't blame UNE-P. Blame the telco vendors for creating products the market doesn't need.

That's the real issue here. ILECS are subtly trumpeting UNE-P as an example of government regulations meddling with a free market. But when did the ILECs last pay the slightest attention to what the market requests? If it were up to them, we'd all still be using analog rotary phones.

Johnson is president and chief research officer at Nemertes Research, a technology research firm. She can be reached at johna@nemertes.com.

Verizon IT

from other midsize businesses.

A business unit within Verizon, Verizon IT has been in the outsourcing business for more than 12 years. In the past, the company has focused on serving large customers and competing with bigger outsourcers such as IBM and Electronic Data Systems (EDS). But recently Verizon IT made a switch, deciding to put more of its efforts into serving midsize businesses, an area that analysts say is a growing but untapped market for outsourcing.

"The small and [midsize] mar-kets have always been seen by the [telephone companies], in particular, and IBM and EDS to a small extent, as being an untapped region where business might be found," says Laurie Seymour, program manager for service provider research at IDC.

Verizon IT originated with the former GTE, and when GTE and Bell Atlantic merged to create Verizon, the IT outsourcing unit found itself with even deeper resources. The company has about 800 staffers and has access to the capabilities and expertise of 10,000 IT professionals within its parent company, says Mike Luebke, Verizon IT unit president.

Verizon IT has data centers in Fort Wayne, Ind.; Sacramento, Calif.; and Tampa, Fla. It has about 65 customers.

Luebke says about half its customers have annual revenue of more than $1.5 billion. These days, however, Verizon IT is focused on the midsize market, companies with annual revenues from $250 million to $1.5 billion, and says it hopes to change its customer mix to an 80/20 split, with the majority being smaller companies.

Luebke says the business unit is taking advantage of its parent company's stability, while still trying to sell itself as a smaller player that can provide the hand-hold-ing that small and midsize businesses need.

"We want to leverage the advantages of the large Verizon and the telecom capabilities that we have there and the strength financially," he says. "At the same time we're a small business unit so we can bring customized attention."

But Verizon IT faces several challenges. The first is getting its name out to prospective customers.

"When you think of IT services, you don't think of Verizon. You think of EDS or IBM," Seymour says. "They don't want to directly combat an EDS or IBM, though; they want to try to find the customer who is looking for perhaps a slightly less-custom option without a high price tag. There are plenty of enterprises out there that are willing to take them up on that."

Another challenge is getting around the reputation of being a telecom firm, which customers might associate with questionable service. At the same time, Seymour says that having the telecom expertise and infrastructure puts Verizon IT in a good position to deliver IT services.

"It really lowers their costs," Seymour says. "They understand how to build networks that are scalable and reliable. And they understand how to blend their services with the larger telecom-munications network."

The proof will be in how Verizon IT can deliver its services, which include managed hosting, application management, mobile computing management and help desk support. ∎

Verizon vaults into managed IP voice

Verizon recently introduced a managed service designed to let network executives off-load the responsibility for maintaining internal Cisco voice-over-IP equipment and network quality of service onto Verizon.

Called IPT Watch, the offering uses a perma-nent virtual circuit between customer sites and Verizon's network operations center (NOC) to let Verizon monitor and troubleshoot user networks.

"At the NOC we set thresholds that are below what would impact a customer's service qual-ity," says Tom Dalrymple, Verizon Enterprise Solutions Group's director of voice switching. "If there are violations, we'll see them and correct the problem before service is affected."

IPT Watch is available only for users of Cisco's Architecture for Voice, Video and Integrated Data gear.

IPT Watch comes in three basic flavors: device management, fault monitoring and per-formance monitoring.

Users who choose the device management option off-load only the responsibility of main-taining their Cisco CallManager application and server. Customers also can choose to add Cisco's Unity voice mail application and server to this service.

The fault monitoring includes device manage-ment, but also makes Verizon responsible for maintaining QoS across a user's network infrastructure.

The performance-monitoring option is the most comprehensive, adding data collection every 15 minutes; detailed, Web-based reports on network QoS; and historical reports for trend analysis.

Verizon field personnel will provide local sup-port for IPT Watch, Dalrymple says.

IPT Watch is available now throughout the U.S. Users will be charged a monthly fee that will vary depending on which option they choose and how many devices they need managed. At the low end, the service would cost between $3 and $4 per phone, per month, Dalrymple says.

— **Michael Martin**

WorldCom

public, major network catastro-phe," says Michael Suby, an analyst at Stratecast Partners. "Questions are now raised in the minds of customers if this outage was related to the reduction of people or the company's bankruptcy. It's hard not to draw those conclusions."

At the very least, the outage exacerbates public perception that WorldCom now has more on its plate than it can handle.

"It just adds to [WorldCom's] cycle of problems," Suby says.

Border router outages that affect an ISP's route tables could happen to any carrier, but nine-hour outages are not typical.

"It did take quite a bit of time to start seeing improvements,"
Palumbo says. "In other instances when we detect a route has been removed and we [notify the carrier], it takes 15 to 30 minutes to fix the problem."

"Whatever they did [originally] caused more erratic and geographically dispersed outages," he says. ∎

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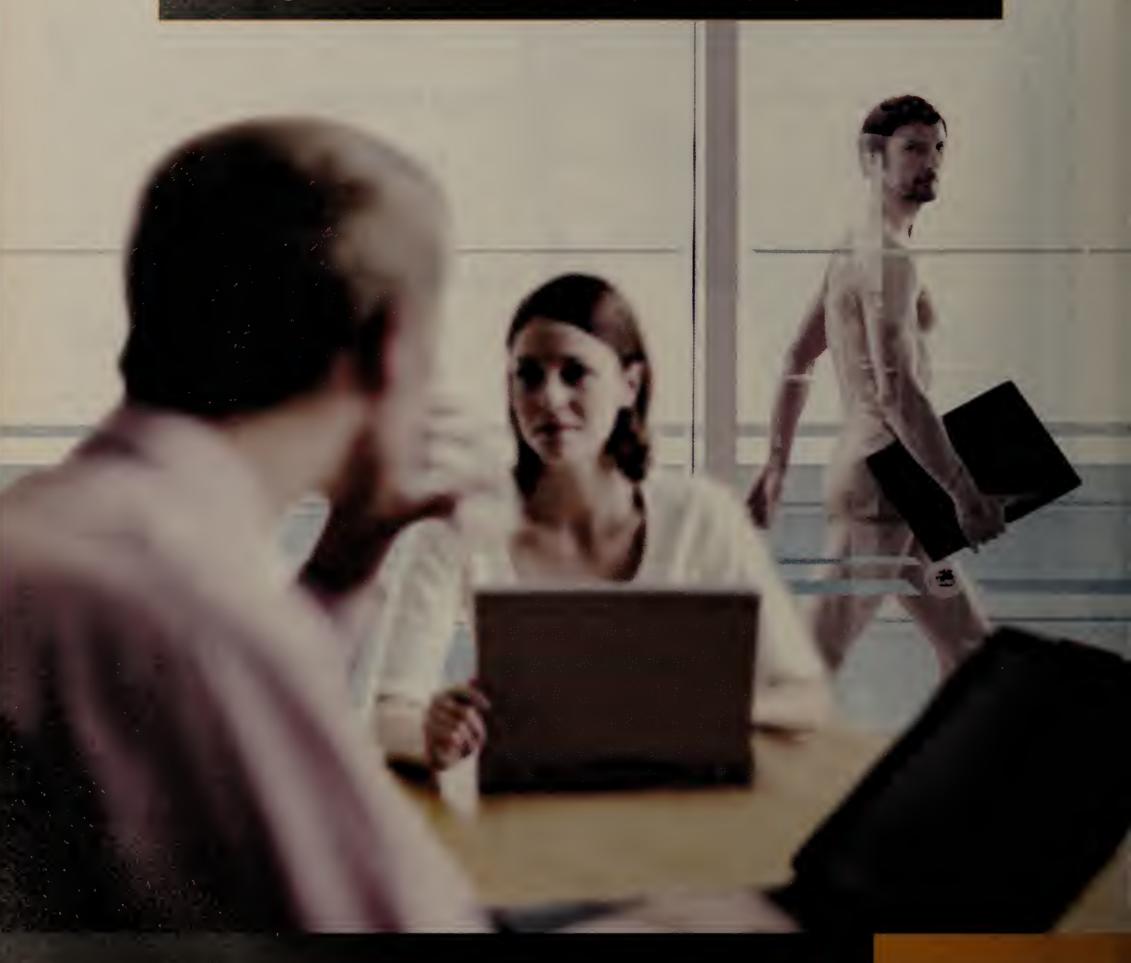
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The Edge

Q&A

Nortel's Pagani talks optical Ethernet

After attempting to enlighten the industry 18 months ago on the different flavors of optical Ethernet — an emerging technology and market on which beleaguered Nortel is depending for recovery — the company has some "new lingo" to share. So forget about how Nortel's been defining optical Ethernet up to now, and read along as Marco Pagani, president of Nortel's Optical Ethernet group, tries to set Jim Duffy, managing editor of The Edge for Network World, *straight on his company's new rap.*

Nortel has had several different definitions for optical Ethernet: Ethernet over fiber, over SONET, over dense wavelength division multiplexing (DWDM) and Resilient Packet Ring (RPR). How do you now define optical Ethernet?

You don't define it as infrastructure options. Optical Ethernet is an opportunity to facilitate convergence across a number of traditional telecom domains. We define it the following way: The always-available global and universal telecom utility. It's really a foundation for next-generation services and applications.

What sorts of services and applications?

We can offer the same capabilities that a TDM private-line infrastructure can offer today with much more significant impact to the [bottom line] for the carrier. There's an opportunity here to create a commodity bandwidth-on-demand service by utilizing technology that gives you the ability to start at 10M bit/sec, go up to 1G bit/sec and then offer the increments in 1M bit/sec chunks without having to dispatch craftspeople, do truck rolls, change out equipment, etc.

Optical Ethernet is an opportunity for convergence and collapsing of multiple data networking protocols into one standard mechanism for allowing service providers to offer this any-to-any switched capability. I'll call that Ethernet VPN.

ATM/frame relay networks are going to evolve to optical Ethernet. IP VPNs have the potential to migrate to optical Ethernet VPNs.

Where does RPR fit in?

RPR Alliance people claim some significant cost advantages of that technology over optical Ethernet in terms of the number of optical ports required …

RPR is not a contradiction to optical Ethernet. RPR is optical Ethernet. RPR is an

Cisco enhances software for resiliency

Short Takes

■ **Seranoa Networks,** a start-up building an IP edge concentrator, last week announced it has raised $15.75 million in first-round funding.

The company says it has seven beta-test customers; most are "revenue generating." The company says the funds are being used to bring the product to market, most likely in December.

■ Service providers proved to be more upbeat about the future in September than they have been all year, according to a report from **Sage Research.** Sage has measured and analyzed the mood of roughly 100 service providers every two months since January and saw an upswing in their mood for the first time this year.

Expectations for the industry rose 15% since the previous survey, Sage says. However, service providers say they still view current conditions as unfavorable. **The Service Provider Confidence Index** is available via free subscription at http://sageresearch.com/SPCIForm.htm.

■ **BY JIM DUFFY**

SAN JOSE — Cisco last week rolled out an enhancement to its routing software that's intended to give service providers an alternative to SONET/SDH for protecting bandwidth.

Called Multi-protocol Label Switching (MPLS) Bandwidth Protection, the extension to Cisco's IOS software uses MPLS Traffic Engineering (MPLS/TE) Fast Reroute capabilities, and an application called Tunnel Builder Pro, to increase network bandwidth protection and resiliency. MPLS Bandwidth Protection helps service providers minimize or eliminate nonproductive redundant circuits and offer carrier-class service-level agreements, Cisco says.

"This gives the customer the ability to much more easily deploy Fast Reroute while preserving the failover of SONET/SDH," says Irwin Lazar, an analyst at Burton Group. "They no longer have to have links sitting idle waiting for a break to happen."

MPLS is designed to provide traffic-engineering capabilities that facilitate network efficiency and reliability, and optimize network resource utilization and traffic performance. Currently, MPLS/TE computes best available paths.

MPLS's Fast Reroute Link and Node pro-

tection feature — which is designed to offer protection from link and node failures — doesn't provide networkwide protection by itself, Cisco says.

Extensions include the Tunnel Builder Pro application, which computes back-up tunnels for bandwidth protection using an algorithm called Hybrid Optimization. Hybrid Optimization backs up bandwidth irrespective of the number of traffic engineering tunnels in the network, Cisco says.

Tunnel Builder Pro, which Cisco developed with Parc Technologies, uses a client-server architecture. The client is an HTML-based Java applet that can run on a standard Web browser, while the server communicates with Cisco routers to configure and monitor them for MPLS/TE.

Another new feature in Fast Reroute Link and Node protection is support for Resource Reservation Protocol Hello packets, which are used as a failure detection mechanism for interfaces other than packet-over-SONET — such as Fast Ethernet and Gigabit Ethernet.

MPLS Bandwidth Protection already has garnered the interest of one service provider.

"We have not yet deployed the bandwidth protection capabilities. However, MPLS/TE with Fast Reroute and offline computation tools such as Tunnel Builder Pro are major

components in our current thinking to achieve [quality-of-service]-based traffic optimization across the entire network," says Joe Fusco, director of Private IP Services at Infonet. "We think these technologies would allow for improved ability to manage a multiclass network within statistical QoS targets and aid in resolving performance issues. Infonet is co-authoring an IETF draft that defines the protocol between the routes and such offline computation tools, so this fits in well with our plans."

Infonet's hesitancy in implementing MPLS Bandwidth Protection is because of the sensitivity of software upgrades to its network, Fusco says. The service provider recently revised its Cisco IOS software for support of class of service and is cautious about another change at this point.

Nonetheless, Infonet says it expects to begin deployment of MPLS Bandwidth Protection next year.

Cisco MPLS Bandwidth Protection is available now. ■

More online!

See how energy giant Schlumberger is using Cisco gear to offer MPLS VPNs

DocFinder: 2623

Switch fabric vendor tackles scalability

New architecture supports different kinds of interfaces, traffic scheduling requirements.

■ BY STEPHEN LAWSON

AGOURA HILLS, CALIF. — A new architecture for the connections between interfaces on a network switch will let equipment makers build platforms that grow with customer needs for seven to 10 years, according to start-up Dune Networks.

The semiconductor company is developing a switch fabric processor and components that work with it, so a switch maker can upgrade one part of its system and know that features already implemented on another part will be able to take advantage of the upgrade, says CTO Ofer Iny, one of several former MRV Communications executives leading the company.

Although a weak economy has slowed the adoption of new network interfaces, Iny says carriers and corporations will need vastly greater network capacity within the next several years. Traditionally, they have moved to the next generation of performance by buying new switch platforms because existing platforms haven't supported the new levels of performance, he says.

What's inside

Dune's Scalable Architecture for Networking Devices (SAND) includes a switch fabric, ingress/egress traffic management and scheduling. The architecture supports many different kinds of interfaces and lets system makers design switches in which each port has different ways of scheduling and buffering traffic. This works because all the pieces were designed together and can talk to each other in their own language, Iny says.

Different kinds of interfaces, such as ATM, TDM and Ethernet,

■ PROFILE: DUNE NETWORKS	
Location:	Agoura Hills, Calif.
Founded:	October 2000
Primary product:	Processors for building scalable communications platforms for use in enterprise backbones, metropolitan wave division multiplexing networks, national service provider core networks and high-end storage networks.
Management:	CEO Eyal Dagan, CTO Ofer Iny and COO Moti Weizman each previously co-founded another start-up and were executives at MRV Communications.
Financing:	Raised $24 million in first-round funding in August from Aurum-SBC Ventures, Jerusalem Venture Partners, Pitango Venture Capital and others.

have different requirements for traffic scheduling. With the Dune architecture, different treatment for various streams of traffic would be carried through the switch fabric, instead of the switch fabric simply providing a "dumb" interconnect among the blades. And because those traffic management capabilities are supported by the fabric, they also can be supported across multiple linked switch chassis, letting system makers scale up their platforms beyond one box.

Dune also aims to provide these capabilities with a small number of chips through greater integration. Fewer chips mean more ports can fit on a switch and the system will require less electricity.

Service providers are tired of

having to buy new hardware every time they want to migrate to the next level of performance, says Jag Bolaria, a switch-fabric analyst for The Linley Group. On the other hand, there are many switch fabric vendors and probably other ways of solving the problem, he says.

Some system designers might maintain that building a large amount of bandwidth into the switch fabric from the start can solve the problem. The role of merchant silicon vendors such as Dune might be growing as network equipment makers face tighter budgets, Bolaria adds. While a strong vendor such as Cisco might be able to continue handling much of its own development, even big names such as Nortel might turn to outside vendors, he says.

SAND is expected to ship in sample quantities by year-end, Iny says.

Lawson is a correspondent with the IDG News Service's San Francisco bureau.

Q A

Nortel

absolutely fundamental element of Nortel's optical Ethernet story. RPR, again, is the ability to facilitate bandwidth efficiency, which translates to effective utilization of interface ports. In a switched Ethernet domain, RPR is integral in Nortel's optical Ethernet implementation. It's relevant in the Layer 2 any-to-any service space.

There are multiple ways to deliver an Ethernet capability. Depending on the service provider infrastructure that can be leveraged, depending on the reliability and the resiliency that the service provider requests and the enterprise requires, there are options to transport Ethernet over multiple domains. Forget about infrastructure options; let's now talk about the services that we're trying to enable and why that service-centricity is more relevant than talking about infrastructure options.

So the real issue is the services and not the infrastructure?

Yep, that's it.

Where is most of the demand for optical Ethernet?

There's demand across the three traditional

categories: Ethernet over DWDM, Ethernet over SONET and Ethernet over fiber. So let me say it in the new lingo. There are people that continue to deploy storage private-line solutions. Anytime you see a storage-area network or business continuity kind of a deployment, that's a storage private line. There has been demand, and there continues to be demand there.

Ethernet-over-SONET or SDH ... Bell Canada and WorldCom are on an aggressive path to offer national service. That is switched Ethernet over an RPR-enabled infrastructure for efficient utilization of bandwidth. There are Ethernet-over-fiber deployments that have started so people that are looking at a switched Ethernet capability. A lot of them are not public yet, but Sprint has a unique service opportunity in Las Vegas with a company called Stations Casino. They're using a switched Ethernet implementation, and in some cases it leverages an RPR infrastructure; in some cases strictly over optical, over fiber.

In Asia, wireless operators have moved away from leased-line implementations to backhaul traffic from base stations into the core of their network. And they're using all flavors of Nortel's optical Ethernet [products] to facilitate that. So whether it's Ethernet-over-fiber, over SONET or over DWDM, those are options for wireless operators to cost-effectively transport and backhaul information from base stations into the core of their network. ■

Nortel sells its optical assets to Bookham for $108 million

Nortel has agreed to sell assets from its optical components business to Bookham Technology for approximately $108 million. The sale is designed to help Nortel in its bid to regain profitability and also ensure it a continued supply of optical components with which to build products, the company says.

The deal includes a three-year supply agreement under which Nortel will buy components from Bookham worth at least $120 million over the first 18 months.

The sale includes Nortel's transmitter and receiver business in Paignton, U.K.; Ottawa, Ontario; and Harlow, U.K.; and its pump laser and amplifiers business in Paignton, Zurich and Poughkeepsie, N.Y.

The assets to be sold include patents, trademarks and other intellectual property. About 1,000 employees will have the option to stay on at Bookham "after redundancies are addressed," Nortel says.

The deal is expected to close by year-end, pending European and U.S. regulatory approvals, and a vote by the shareholders of Bookham.

The transaction is an "important step" in Nortel's path to profitability and its strategy to provide high performance, cost-effective optical network systems for its customers, says Brian McFadden, president of Nortel's optical networks group.

— James Niccolai

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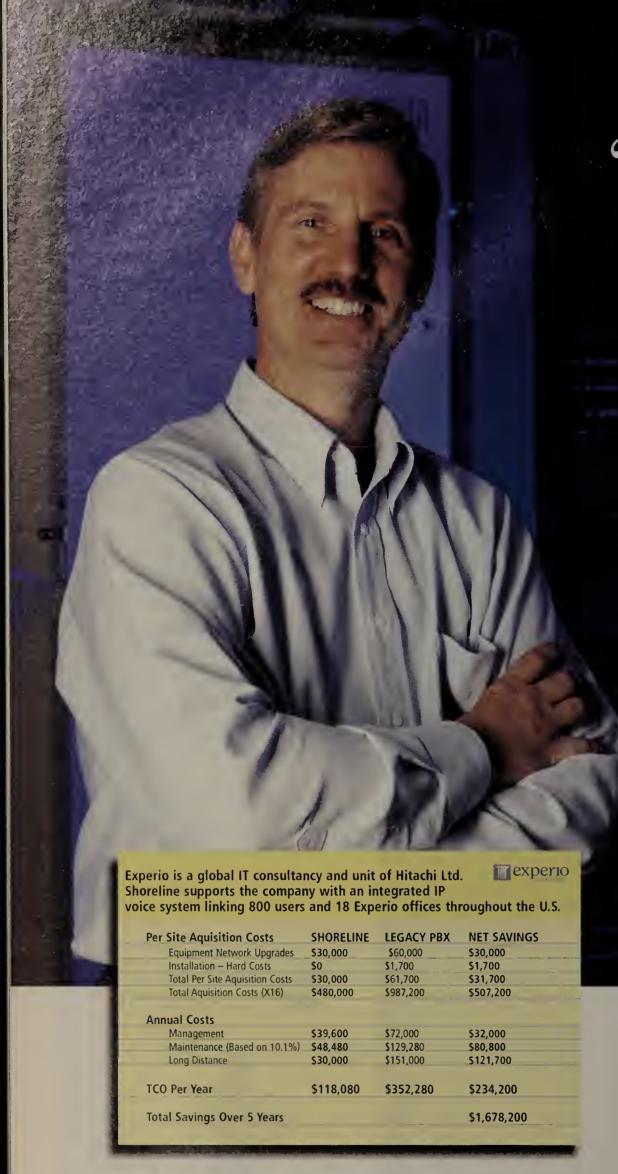
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Technology update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

Circuit extensions assist Ethernet over ATM

■ BY RICHARD FOOTE

ATM circuit extension technology, which leverages enhancements to RFC 1483, lets service providers map multiple virtual LANs to one virtual circuit or multiple virtual circuits to one VLAN.

Using this as a building block, service providers can build multipoint-to-multipoint networks over ATM and Ethernet networks to deliver more flexible and scalable Ethernet-based services to companies.

Conceptually, offering Ethernet services over ATM networks is as simple as encapsulating the ATM traffic in a packet, attaching a label to it and sending it over a Multiprotocol Label Switching (MPLS) network. Essential to this vision is the encapsulation of Ethernet and ATM traffic.

While the Martini draft is the de facto standard for Ethernet, the standards bodies still are debating the best method for encapsulating ATM. In the meantime, service providers that want to deliver Ethernet-based services over ATM networks are faced with the dilemma of waiting for an MPLS ATM encapsulation standard to emerge or implementing a proprietary solution that, in all likelihood, will change. Neither option is particularly attractive.

But service providers can deliver Ethernet-based services over ATM networks using ATM circuit extension technology, which builds on RFC 1483 to map individual or multiple Ethernet VLANs to ATM virtual circuits. RFC 1483 outlines a method for mapping one VLAN to a one virtual circuit. With enhancements to the standard, service providers can map multiple VLANs to a single virtual circuit or multiple virtual circuits to a single VLAN. This technology lets service providers build multipoint-to-

multipoint networks with lower-cost Ethernet technology and offer corporations Ethernet-based services such as:

● Point-to-point LAN extension services.
● Point-to-multipoint LAN-to-LAN services.
● Multipoint-to-multipoint LAN-to-LAN services.

To extend VLAN traffic between two customer sites, a service provider needs to configure any logical port as an 802.1Q VLAN port and map a customer's VLAN to a virtual circuit on the appropriate ATM port.

It also is possible to set up service classes for a specific VLAN or for particular appli-

cations. A service provider can extend a bandwidth guarantee on a virtual circuit over a VLAN with rate-shaping technology. Rate shaping gives service providers the power to map the bit rate information from a virtual circuit to a VLAN ID, enabling bandwidth guarantees across the network.

For example, a videoconferencing application for a VLAN could be mapped to an ATM virtual circuit where the service category is constant bit rate and the peak cell rate is set to 100,000 cell/sec.

To create a point-to-multipoint LAN service, a service provider needs to configure an ATM access port with multiple virtual circuits to multiple customer sites and map

a VLAN to each virtual circuit. The service provider also could set up a service class for a particular VLAN or application by mapping IEEE 802.1p to ATM quality-of-service parameters.

Once ATM virtual circuits are mapped to Ethernet VLANs with 802.1Q tags, the VLANs can, in turn, be mapped to MPLS tunnels. By introducing MPLS into their network, carriers can leverage the technology's service enabling and traffic engineering capabilities to introduce value-added Layer 2 VPN services, such as virtual private lines or virtual private LANs, and Layer 3 VPN services, such as IP/Border Gateway Protocol VPNs.

For multicampus companies, Ethernet-based services provide businesses with a more flexible and scalable way to connect offices in different regions. With point-to-multipoint LAN extension services, or virtual private LAN services, corporations can connect multiple sites to one VPN.

Ethernet-based services also offer companies increased control of the bandwidth assigned to various applications. Bandwidth-on-demand, enabled by the flexibility of Ethernet technology, lets companies self-provision incremental bandwidth per department, application or office. By giving customers more direct and immediate control over their services, carriers can increase satisfaction and reduce churn in an ever-more-competitive marketplace.

ATM circuit extension technology provides a future-proof network migration path over which service providers can deliver Ethernet services to companies.

Foote is a senior systems engineer at Riverstone Networks. He can be reached at questions@riverstonenet.com.

■ HOW IT WORKS   Ethernet over ATM

Enables point-to-multipoint virtual private LAN services.

❶ Service provider configures ATM access port with multiple virtual circuits to connect to multiple customer sites.

❷ Service provider maps a VLAN to each virtual circuit. Using 802.1p and 802.1Q tagging, VLANs can be mapped to MPLS tunnels.

❸ Service providers can then deliver virtual private LAN or Layer 3 VPN services to customers.

Service provider — Virtual circuits — ATM port — ATM network — Router — MPLS tunnels — Ethernet ports — Customer VLAN — Customer VLAN — Customer VLAN

Ask Dr. Internet   By Steve Blass

How do you most easily identify the host of an active IP address on your network with no record in DNS or WINS? Our first inclination would be to run a packet sniffer to look at what protocols are running and deduce what it might be (only good if it gives off traffic), or repeatedly ping while disconnecting segments of the network to narrow the location. Our unknown host turned out to be a wireless access point that had been issued an IP address. Is there a better way?

Nmap from insecure.org can identify many systems by their TCP signature. Traceroute can tell you the path to the device so you can identify the segment it is on. Ethernet media access control addresses contain a manufacturer-specific ID that can sometimes help identify the device. Time domain reflection cable meters can indicate the distance to the device along the wire. Managed switches (SNMP turned on) can tell you which IP address is on which switch port. To stop mystery

devices from obtaining an IP address, Dynamic Host Configuration Protocol can be configured like old fashioned BOOTP to only allow IP address assignment to known MAC addresses, so unauthorized wireless access points would have more trouble just plugging into the network and working

Blass is a network architect at Change@ Work in Houston. He can be reached at dr.internet@changeatwork.com.

GEARHEAD INSIDE THE NETWORK MACHINE
Mark Gibbs

All-in-one entertainment center a bust

We find it amazing how uncritical the industry can be when it buys into what appears to be a cool idea. Case in point: The ZapStation from ZapMedia, a computer-based device that is designed to do everything from rip CDs to play DVDs and tune into Internet radio.

This device was hyped for years and even won awards before it shipped! In 2001, *Popular Mechanics* awarded it its Editor's Choice Award, and recently a reviewer who shall remain anonymous wrote of the device: "If you are looking for a one-stop shop for audio and video needs, the ZapStation is not a bad choice." This person must have been heavily medicated.

In principle, the ZapStation is a terrific idea. In a standard amplifier-sized box the company has put together an audio player (MP3, Windows Media Format V7 and SHOUTcast Internet Radio) and a video player (MPEG, Windows Media Format V7, DVD-Video and VCD), both with a choice of Dolby Digital (AC-3) 5.1 Channel Surround, Dolby Surround (AC-30) and DTS

Digital Out. There's also an audio recorder (MP3 and Windows Media Format V7), and you can rip CDs, burn CDs, use it as a music and video jukebox, receive Internet Radio, browse the Web and access Zap-Media's entertainment portal.

The engine driving this is an 800-MHz Intel Celeron running Linux with 128M bytes of RAM and a 30G-byte hard drive. The front panel houses a CD/DVD drive, a power switch and a user interface based on a three-color display with "soft" buttons (the function of each button is shown on the display). We found the usability poor. There's also a four-way rocker switch with a central component, the combination of which works like a mouse.

The back of the ZapStation sports an RJ-45 Ethernet connector, a USB port (currently only used to download music to the Rio 500 Digital Audio Player), S-Video out, SVGA out, composite video out, digital audio out (coax and optical), analog in (for a cable or satellite converter, for example) and analog out.

By now you have probably started thinking "Wow! That's a lot of technology in one package!" And therein lies a problem: trying to get all the parts to work together. On the ZapStation, some work well: DVD playback is very good, and the audio is excellent. But other features,

including the Internet and network support, are abysmal, and the user interface is eccentric.

Because of ZapMedia rethinking its

marketing strategy and scaling back its Web plans, the unit we were using would time out while trying to access ZapMedia's site, even at 1 a.m. (The original business model called for subscribers to pay to access content on ZapMedia's Web site.)

Because of these timeouts, we couldn't access the company's list of Internet radio stations after 10 tries, so we never got to try this feature. The ZapStation itself appeared to be somewhat unstable: We managed to crash our system in 5 minutes by going to the network setup, examining the settings and selecting cancel. It took two reboots before the system sorted itself out.

You can rip CDs to the internal drive. You

also can import music files (and for that matter any other media the unit can handle) from a network PC but, again, engineering triumphed over design. To perform a media file transfer you have to have an FTP server running on the PC and specify that machine's IP address in the ZapStation's FTP client that is presented through the unit's Web browser. ZapMedia provides a downloadable ActiveX component that you can install on the serving PC, but we can't imagine a consumer doing this.

Once media is on the ZapStation you can only export to one type of supported Rio device. This is because of Microsoft's licensing requirements, which prevents direct disk access so Microsoft's Digital Rights Management system can't be defeated. The system is so locked up with encryption you can't even upgrade the disk or add drives. See this week's Backspin for more on this topic (page 82).

We could go on about the flaws in the ZapStation, but the bottom line is that we wanted to like this product but just can't. The company tells us it is considering making changes to future versions but until then, this product is not, at $600, worth buying.

Zap a message to gearhead@gibbs.com.

Cool Tools
Quick takes on high-tech toys
By Keith Shaw

MobileWise demos "wire-free" electricity pad

In covering mobile computing technology, I've always said end users don't become truly mobile until they figure out a way to get rid of the power cord for laptops.

MobileWise is one step closer to that with its recent demonstration of its Wire-Free-Electricity Base at Giga Information Group's Power 2002 Conference. The base would be used with MobileWise 's Wire-Free-Electricity Adapter, which can reside within or externally attach to mobile devices, and the adapter draws power from the plugged-in base.

MobileWise's Wire-Free-Electricity Base lets devices with a MobileWise Adapter draw electricity from the plugged-in base.

The adapter can integrate externally into most existing laptops and other portable devices, MobileWise says. The flat surface of the base resembles a small desk blotter. If a MobileWise-enabled device is placed on the base, it can become powered and charged as if it were connected to an electrical outlet (see picture, left).

In addition, the base allows for multiple mobile devices to be charged and powered simultaneously, MobileWise says. MobileWise sells the wire-free electric power chipset products to OEMs. For more information, go to www.mobilewise.com.

Much like wireless LANs are being set up across public access spaces, I can see a day when you will be able to walk into a coffee shop, place your laptop on an electricity base (MobileWise says the bases are safe from liquid spills) and not have to worry about losing power. Imagine not having to take your power cords with you on trips!

Stand-alone DVD duplicator

Interactive Media has announced a device that lets users create duplicate DVDs or CDs without a computer.

The 2x KanguruDVD Duplicator (starts at $950) can copy up to seven DVDs or CDs simultaneously, the company says. Models are available in four versions (copying one-to-one, one-to-three, one-to-five or one-to-seven).

The device offers up to 4.7G bytes of storage capacity on a single DVD disk and supports DVD-R, DVD-RW, CD-R and CD-RW formats. It also can write to DVD-R General Purpose Media and works with CD-RW media, Interactive Media says. Other features include automatic DVD or CD format detection, copy, test and verify options, and an LCD display menu. For more information, go to www.interactivemediacorp.com.

USB hub gets smaller

IOGear recently introduced the MicroHub, a compact Universal Serial Bus hub that can connect up to four USB

devices. It measures 9 by 4 by 1 centimeter, and weighs less than 2 ounces. Compatible with PCs and Macintosh computers, it supports data transfer rates up to 12M bit/sec. It also has a built-in USB cable and cord that can tuck away into the device when not in use. The MicroHub is now available for $15, IOGear says. The device supports Windows 98, 98SE, 2000, ME and XP, as well as Mac OS 8.6 or later. Go to www.iogear.com for more details.

IOGear's MicroHub connects USB devices and weighs less than 2 ounces.

HP launches new flat-panel monitors

Hewlett-Packard has some new flat-panel monitors, the 18-inch Compaq TFT1825 and 20-inch Compaq TFT2025 models.

The TFT1825 includes portrait and landscape viewing, and a height-adjustable base. The base also can be detached, to let users place up to four panels together to maximize the amount of information displayed. The $850 TFT1825 can adjust brightness, contrast and other settings with direct-access keys on the front of the panel, HP says.

The 20-inch TFT2025 has a 1,600-by-1,200-pixel resolution on a 20.1-inch viewable screen, HP says. It has advanced video inputs that allow picture-in-picture capabilities, which would enable users to work and watch a live television feed simultaneously. The $1,500 TFT2025 includes advanced DVI digital interface, composite and S-video inputs. For more information, go to www.compaq.com/products/monitors.

Shaw can be reached at kshaw@nww.com.

opinions!

Gloves come off in IP Centrex vs. IP PBX

The Network World Showdown pitting IP Centrex service suppliers against IP PBX vendors at the Voice on the Network show in Atlanta last week was close, but there was a winner.

We asked three IP Centrex suppliers and three IP PBX vendors to come to VON with team responses to a mock RFI put together by myself; Mike Hommer, manager of consulting for Miercom, which is a member of the Network World Global Test Alliance; and Carl Ford from VON.

The IP Centrex team consisted of GoBeam, PeerCom and NetCentrex, while the IP PBX camp featured Vertical Networks, Mitel and Alcatel. Both groups were asked how they would serve a business with three sites needing DIDs, voice mail, transparent feature support and the ability to support interoffice transfers.

The hypothetical company consisted of a New York headquarters with 100 stations and four T-1 trunks, a branch office in Hoboken, N.J., with 10 stations, five analog lines and T-1 access, and a branch in Bakersfield, Calif., with 10 stations, five analog lines and DSL.

The teams came prepared to answer eight core RFI questions: the look of the basic configuration; cost per station; endstations supported; how moves/adds/changes are handled; the scalability story; how messaging is addressed; plans for mobility; and key advantages.

Not surprisingly, both teams said their solution was scalable, reliable, manageable and cost-effective (log on to www.nwfusion.com, DocFinder: 2638, for a list of the players, their full presentations and a forum on the subject).

The key differentiators that stood out:

• With IP PBXs you can migrate gradually, department by department if need be, while the IP Centrex approach is typically a larger conversion.

• IP PBXs can be used with a range of service providers.

• IP Centrex has a better disaster/survivability story because it keeps ticking regardless of the condition of the customer's site.

• New features are available to IP Centrex immediately upon release, relieving the customer of upgrade hassles/version control problems.

We asked the audience to vote for the team that made the most compelling case for our hypothetical network, and the winner was: IP Centrex (although just by a hair).

In summary statements, Woody Boyd, CEO of PeerCom, said IP Centrex now enables service providers to rival CPE capabilities. "It is just a question of who owns the equipment."

That appears to be more true than ever. Large organizations might end up using a mix of the approaches.

— John Dix
Editor in chief
jdix@nww.com

Spam wars

Regarding Mark Gibbs' Backspin column "Losing? The war has been lost!" (www.nwfusion.com, DocFinder: 2625): Antispam sites advise you not to verify your e-mail address to spammers by following the opt-out instructions in spam. So just because consumers haven't opted out or complained about Pier 1 Imports' spam, please don't assume we accept it. We consumers tend to vote with our feet.

Marty Gizzi
Fredericksburg, Va.

Ethernet needs fixing

Regarding Jim Quinn's column "Semper Ethernet" (DocFinder: 2626): We probably should not be patting ourselves too contentedly on our collective backs about the success of Ethernet. It has and is working marvelously but needs fixing.

Most LANs run full duplex on their own unshielded twisted-pair connection back to a switch port, so there is no longer the need for the "Carrier Sense" (listen before talk) in Ethernet's Carrier Sense Multiple Access/Collision Detection (CSMA/CD) scheme. Likewise, there is no need for Collision Detection when you're going full duplex on your own line to your switch port. And with shared media falling by the wayside, pressure is mounting to consider using larger (Jumbo) frames.

The Ethernet of the future — or its replacement — needs two quick fixes to begin with. First, the "best effort" nature of Ethernet isn't going to hack it much longer; something more circuit-based would work better. Second, Ethernet needs to carry more data more efficiently.

Will it ever happen? Probably not. In five years, Ethernet will likely be the "law of the LANd," but it

E-mail letters to jdix@nww.com or send them to John Dix, Editor In Chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

will be so patched we old-timers won't recognize it.
Phil Parshall
Network technician, IT department
Roswell Park Cancer Institute
Buffalo, N.Y.

Questionable skill

In her letter to the editor, Debbie Joy cited a CIO magazine study that found the most valued "skill" of a CIO is communication, not technical skills (DocFinder: 2627).

No wonder IT is poorly regarded. What are CIOs communicating if they have no technical skills — unrealistic expectations? Would you hire a CFO that didn't know finance? Apparently IT has no business value or the CIO would be trusted with her contribution to the organization, not the ability to communicate without thorough knowledge of the subject.

I've been an IT professional for 25 years and do not recommend that my children follow in my footsteps. Because IT is not valued as a partner in the business.
Gary Sammit
Schaumburg, Ill.

Happy Mac

In his column "A happy geek" (DocFinder: 2628), Scott Bradner writes of how "OSX 10.2 did away with the smiling Mac on startup, much to the annoyance of Mac purists." At first I was stunned that Apple changed the smiling Mac, and after a while I started to miss it. Now that it is almost certain that the smiling Mac will never return, I imagine sitting on a couch 25 years from now trading "war stories" about the time when Macs still used to boot up with a smiling Mac. Oh, and mocking the youngsters: "You never saw a smiling Mac, so don't tell me ...!"
Adrian Foltyn
System administrator
Macevangelist.de
Nuremberg, Germany

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meow...

GOV'T CYBERSECURITY PLAN

USER VIEW
Chuck Yoke

IT jobs still abound, if flexible

In a previous column I considered whether the current downturn in the network industry is a plateau or just a short resting place (www.nwfusion.com, DocFinder: 2525). While job opportunities will decrease, there still will be opportunities for people who are willing to adapt to the changing marketplace and scale down, relocate or shift gears.

My recent unscientific survey of a popular online job site showed that in the last 30 days there have been openings for 139 network engineers, 348 network administrators, 286 network analysts, 111 network operations personnel, 78 network support technicians and 158 network security personnel. If I extended the search to include sales engineers, project managers and voice personnel, the total number of openings increased to more than 1,600. Nothing to cause one to change careers, but still a respectable number of positions being advertised.

While TCP/IP was the overwhelming experience being sought, 50 of the postings were looking for SNA experience, 38 were requiring IPX experience, eight were seeking Appletalk experience and one wanted Banyan Vines experience.

So jobs are available, but to have a chance at one, you need to be flexible. Salaries are being scaled down. The days of getting a high-five-figure salary for being able to spell T-C-P-I-P are over.

Relocation might be necessary. I love living in Colorado, but less than 50 of the total openings were located here. If I were unemployed, I would have to make a life decision to either stay in Colorado and find another career, or move to another region where more IT jobs are available. Many people probably will have to make a similar decision.

You also might have to shift your career focus. You might want to be a network engineer focused on designing new networks. But in today's economy, companies want to get more out of their existing networks. Operations, support and security personnel are more in demand than designers. And while TCP/IP is the focus of most networks, SNA and IPX experience is valuable as companies attempt to squeeze more out of their current investments.

Is the willingness to relocate and become an SNA analyst at $20,000 less than your previous salary going to guarantee you a job? No, but it will at least improve your chances. IT careers are becoming harder to obtain. Opportunities are fewer, competition is tougher, and salaries are lower. Not everyone who wants to be in this field will be able to get a job. But you can say the same thing about journalism, accounting, public relations and a host of other occupations. And still everyday someone obtains a position in one of these fields.

The network job market is down, but not out. Networks are an integral part of the business, consumer and scientific worlds, and they're here to stay. But IT is no longer a treasure chest of job opportunities. It is like any other field that will have good times and bad times.

Yoke is a business solutions engineer for a corporate network in Denver. He can be reached at ckyoke@yahoo.com.

> The days of being able to get a high five-figure salary for being able to spell T-C-P-I-P are over.

ABOVE THE COULD
James Kobielus

Exchange's uneasy dominance

Microsoft now dominates the enterprise collaboration market, although it wears that crown uneasily. The vendor seems more nervous than ever about its future prospects in the collaboration market — and it has many good reasons to worry.

Microsoft is locked into a long-running horse race with Lotus for the lead in the groupware arena, and any slip on its part could jeopardize its market standing. Microsoft also recognizes the challenges it faces from standards-based messaging products, browser-based Web collaboration products and peer-to-peer offerings, as well as such competitors as Lotus and Novell.

Microsoft has the undivided attention of competitors, most of which aren't shy about pitching their collaboration products as alternatives to Exchange. Dozens of vendors can claim that their products do the core of what Exchange does — e-mail and calendaring/scheduling — and can do it less expensively.

On the customer side of the equation, Microsoft is painfully aware that no more than one-quarter of its Exchange 5.5 installed base has upgraded to Exchange 2000, in spite of that latter version's having been on the market for more than two years. Users' beefs with Exchange 5.5 and Outlook include the products' premium pricing, performance and scalability problems; substandard offline access functionality; inflexible public folders; and vulnerability to viruses and spam.

Microsoft must know that many corporate customers are looking for alternatives to Exchange 2000. There's nothing particularly wrong with Exchange 2000, and it adds considerable new user and administrative functionality over Exchange 5.5. But upgrading to Exchange 2000 requires a concurrent upgrade to Windows 2000 and Active Directory. Many Exchange users are reluctant to undertake three concurrent infrastructure upgrade projects when IT budgets are under serious pressure from a down economy. Many organizations will look seriously at any standards-based product that does e-mail and calendaring as well as Exchange.

But there's little evidence that established Exchange users are migrating from Microsoft's collaboration offering in great numbers. Nevertheless, Microsoft has developed a defensive strategy that primarily revolves around an aggressive offense. Undeterred by sluggish customer acceptance of Exchange 2000, Microsoft has pushed the development of the next two versions of the product, code-named Titanium and Kodiak (slated for release in 2003 and 2004-2005, respectively). Once again, Microsoft is announcing impressive feature lists and promising significant improvements in user and administrator productivity.

However, Microsoft has failed to define a compelling reason for users to migrate to either of these future new versions, much less to Exchange 2000. For the most part, users are reasonably content with Exchange 5.5 and rely on it for the core collaboration services of e-mail and calendaring/scheduling. Users' perception of these core features as "commodity" services will continue to weaken the traditional corporate justification for investing in full-featured groupware such as Exchange and Domino. By emphasizing feature bloat in future versions of Exchange, Microsoft risks creating the perception that its product is too high-end for the mass corporate market.

Another trend that could weaken Exchange's position in the market is, paradoxically, the popularity of its Outlook client. Many collaboration vendors, including Lotus and Oracle, provide plug-ins for customers who wish to keep using Outlook but use it to access those vendors' servers. End users don't care what server product is providing their back-end messaging and calendaring functionality. Consequently, Exchange's core functionality is becoming "commoditized" through marketplace trends. As a result, current Exchange organizations have some flexibility to swap it out for a competing product.

Clearly, Microsoft isn't immune from these basic trends effecting the collaboration market. Exchange's dominant position in this competitive arena isn't as unassailable as it might appear.

Kobielus is a senior analyst with Burton Group, an IT advisory service that provides technology analysis for network planners. He can be reached at (703) 924-6224 or jkobielus@burtongroup.com. The opinions expressed are his own.

> Exchange's dominant position in this competitive arena isn't as unassailable as it might appear.

10 Gigabit Ethernet News

The New Standard – a Summary

Essentially it's Ethernet, but faster, and with a wider scope. 10 Gigabit Ethernet is a full duplex, fiber optic implementation designed for point-to-point communication in LAN, MAN and WAN applications.

It scales LAN backbones, aggregates 1GbE, leverages 250 million Ethernet ports, supports local, metro and wide area in one seamless network. It is data rate and format compatible with the installed base of SONET/SDH networks via the 10GbE WAN interfaces. The standard also includes the XAUI architecture for the applications within communications and computer systems.

For more information on the standard, technical details and its implementation visit www.10GEA.org.

The Principal Benefits

The main purpose of 10GbE is to expand Ethernet's cost model and simplicity to 10 Gbps networking, and extend the reach of Ethernet up to 40km.

10GbE Within the Enterprise Network

10GbE can be used to connect backbone switches and routers, simplifying network connectivity and administration.

In addition, bandwidth capacity for the Enterprise backbone is increased and network latency between switches and routers is reduced.
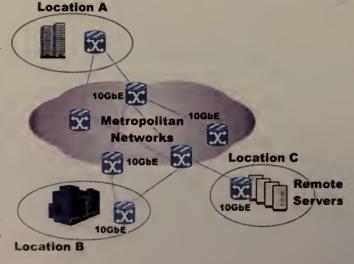
The plug-and-play nature of Ethernet brings reduced administration and operating costs from Gigabit bandwidth workstations, servers and switches, to an upgraded 10GbE Enterprise backbone.

10GbE Applications for Metro Service Providers

For the first time, an Ethernet standard has been designed for Metro applications as well the Enterprise.

The earliest deployment of 10GbE are being seen in Metro Networks as a natural extension of the thousands of 1GbE Metro networks already deployed world-wide.
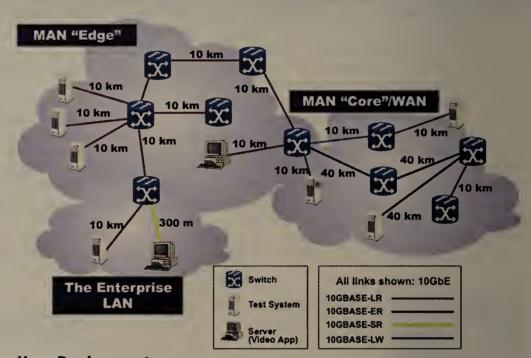
10GbE now enables new simple Ethernet services such as dynamic allocation of bandwidth on demand and VLANs to scale to carrier class networks.

Following the events of September 2001, corporations are now demanding persistent and dynamic remote backup and recovery of their corporate business information. The new Metro features of 10GbE can effectively offer a solution to effectively store and quickly switch to or recover from a remote data or storage center.

The State-of-the-Art

During two public interoperability demonstrations this year, the 10GEA showcased a 20-hop network covering 200 kms of actual fiber. Equipment from 25 10GbE switch, server and test vendors comprised the world's largest seamless 10GbE network.

User Deployment

Early user deployment in campus, LAN, MAN and WAN applications are appearing. Suppliers of components, test systems and infrastructure products, are now building on the experience of shipping products that began in 2001.

More Information

Visit www.10GEA.org for more information and white papers on topics including: 10GbE Technology Overview, Optical Fiber and 10 GbE, Next Generation WAN Transport, Ethernet as used in Resilient Packet Rings, XAUI: Overview, Introduction to iSCSI, 10GbE Interconnection with WANs.

Join us later this month at the 10 GIGABIT ETHERNET USER CONFERENCE, October 31 and November 1 in San Diego. Attendance is free and limited to the first 300 people. For more information visit www.10gea.org or http://www.sdsc.edu/10GigE.

The workshop is sponsored by the National Science Foundation and the 10 Gigabit Ethernet Alliance, and will be hosted by the CalNGI (California Next Generation Internet) Network Performance Reference Lab at the San Diego Supercomputer Center (SDSC).

Also, visit the 10GEA web site for additional information on an upcoming 10GbE Webinar in November.

My, how Ethernet has grown. Nearly 30 years since its debut, the technology rules the LAN and is poised to muscle in on the wide-area, storage, broadband and beyond.

All Ethernet, all the time

■ BY KIMBERLY B. CAISSE

Ethernet is almost everywhere, dominating LANs and enterprise backbones around the world and storming the metropolitan area. With the 10G Ethernet standard in place, Ethernet is primed to conquer new territory in the WAN, storage and broadband. But just when it takes off in these areas depends on economic conditions and carrier acceptance.

Ethernet is at the heart of the IP storage movement. At the same time, carriers are adding Ethernet services to their long-standing frame relay and ATM services. Ethernet also is poised to enter the broadband arena through the work of the IEEE 802.3ah Ethernet in the First Mile task force.

"The big saying has always been, 'Don't bet against Ethernet'," says David Passmore, research director at Burton Group. "It beat out Token Ring. People are predicting it could beat out SONET. And it could beat Fibre Channel."

The speed at which Ethernet packets travel today is only one indication of the technology's lure and potential. "Ethernet is now a business model," says Bob Metcalfe, the inventor of Ethernet and a general partner at Polaris Venture Partners. "Now that I'm a [venture capitalist], I see an ever increasing number of business plans for Ethernet this or that."

Such business plans are moving Ethernet's basic packet design forward "based on market-demand interoperability, vendor-owned implementations and fierce competition on price, performance [and] availability," he says.

The momentum of Ethernet got another boost in June when the IEEE 802.3ae standard for 10G Ethernet was approved. Despite this, 10G Ethernet's future as a WAN transport technology is far from guaranteed.

You don't need to look any further than metropolitan-

PETER BENNETT

area networks (MAN) to see how the IT spending slow-down affected Ethernet service providers.

Yipes Communications filed for bankruptcy protection in March, and, after selling three of its 13 fiber networks to Expedient, it re-emerged as Yipes Enterprise Services with $54 million in new funding. Telseon sold its assets to OnFiber Communications for $85 million in July.

Yet Yipes co-founder Frank Robles obviously believes in high-speed Ethernet services. He launched another Ethernet carrier company, Neopolitan Networks, in August with the idea it will undercut the cost of T-1 and T-3 services by 25%.

The challenge for 10G Ethernet is to break through the existing carrier business model. When carriers installed SONET equipment more than a decade ago, they used a 15-to-30-year depreciation model. Conversely, equipment purchased by companies — including Ethernet LAN gear — usually is depreciated over a three-year period, and vendors base next-generation product schedules on this model.

Carriers want service revenue to support or exceed their investments in equipment. The new per-megabit pricing of Ethernet services might cannibalize tiered pricing for legacy services like T-1 lines. Add to this the economic pressures in play today, and it's no wonder carriers are nervous about spending.

"If nobody has a solid enough business model to bring them [10G Ethernet WAN products] into fruition, then the technology is moot," says Jonathan Thatcher, principal engineer at World Wide Packets and chairman of the IEEE 802.3ae task force. "We could see major research and development take a notch out of Moore's law."

In effect, the market could skip past 10G Ethernet and move directly to 100G Ethernet or another faster speed. Engineers are already researching future generations of Ethernet, which could run at 40G and 100G bit/sec.

Gradual advancement

Other industry observers believe Ethernet's movement into the WAN will be gradual, and that what some of the services companies will tap into won't be pure Ethernet.

The hurdle to deploying native Ethernet gear is that carriers refuse to do rapid forklift upgrades of their networks to roll out new access technologies, including DSL and Ethernet. Carriers are trying to leverage their investments in SONET and other legacy equipment as long as they can.

The good news for Ethernet is that carriers realize its domination of enterprise networks is leading it to become a serious alternative to legacy network services such as frame relay and ATM, which run over SONET networks. Some Ethernet services utilize existing SONET infrastructures.

"If I were to look at a crystal ball, sure, [Ethernet is] going to be a prominent interface, even across WANs as more and more standards-based work happens," says Soni Jiandani, vice president of Cisco's Internet Systems Business unit. Work by vendors on WAN equipment that supports a variety of transport technologies also will drive Ethernet into the wide area.

"Customers are not going to rip out what is in the [WAN] today," she says, noting that Ethernet frames today can travel over dense wavelength division multiplexing

and Resilient Packet Rings.

While most carriers will add Ethernet capability to their existing network infrastructure, "greenfield" service providers — the ones with new fiber infrastructures — will be among the early adopters of basic 10G Ethernet technology, observers say.

Big corporations, primarily in the manufacturing and design industries, and universities are among the first to tap 10G Ethernet WAN services. These users typically perform imaging, 3-D modeling and other bandwidth-intensive applications. Now these companies are upgrading to the

Some users need 10G Ethernet's speeds to improve the performance of their network-attached storage and storage-area networks. Running backup and recovery and data mirroring applications over Ethernet boosts their reliability and scalability. These storage designs utilize iSCSI, Fibre Channel over IP and Internet Fibre Channel Protocol, all of which ride on top of IP.

Extreme Networks has customers using BlackDiamond switches with prestandard 10G Ethernet network interface cards today, says Ray Milhem, senior director of product management. Now these companies are upgrading to the 802.3ae-based LAN PHY, or physical interface.

Using 10G Ethernet for long-haul WAN services is almost nonexistent, but some users have created smaller 10G Ethernet-based MANs or WANs.

The University of Southern California is installing 10G Ethernet modules to its Foundry Networks switches at three sites: the Information Sciences Institute (ISI), the USC campus in Los Angeles and the One Wilshire Building communications hub in downtown Los Angeles.

"In effect, we're making our own metropolitan-area or wide-area network, whatever you want to call it," says Richard Nelson, director of the ISI's information processing center.

More users will migrate to 10G Ethernet WAN as their campus requirements increase and they need to connect to an existing SONET network, Milhem says.

Hands down, the high speeds of Gigabit Ethernet and 10G Ethernet and their relatively low costs are what are driving this LAN-centric technology into MANs and WANs. Most of Ethernet's shortcomings, which are rooted in its design as a best-efforts technology, are expected to be addressed in the short term.

"Ethernet, natively, is a best-efforts technology. It always will have less fault tolerance [than SONET]," says Marshall Eisenberg, director of product marketing at Foundry. "But the IEEE feels it can build an alternative that's good enough."

However, the XENPAK Multisource Agreement, which is a group of mechanical definitions developed by compo-

nent vendors such as Agilent Technologies and Agere Systems, aims to strengthen the functionality of the WAN PHY portion of the 802.3ae standard. Among other technical issues, it creates a plug-and-play WAN PHY that would give customers the option to buy any type of optic — short reach, long reach or extended reach.

Overall, the WAN PHY "slows down 10G to OC-192 and encapsulates it in SONET frames," Eisenberg says.

Vendors were evaluating XENPAK modules over the summer months. Some XENPAK-based modules are expected to hit the market in early 2003.

With both connectivity modules in place, more organizations are expected to deploy 10G Ethernet equipment and services in the next 12 to 18 months.

Broadband appeal

But for Ethernet to rule the WAN as it does the LAN, it needs to become a popular last-mile technology, Thatcher says. The price of 10G Ethernet equipment also has to come down significantly.

Thomas Nolle, president of CIMI Corp., a strategic consulting firm in Voorhees, N.J., and a Network World columnist, agrees, but adds that customer demand for Ethernet broadband is equally important as actually getting the technology into the last mile.

"Consumer broadband is the only credible driver for demand-side growth in metro Ethernet, and customer pull of metro Ethernet is the only credible driver for 10 Gigabit metro Ethernet," he says.

The problem, Nolle says, is consumer broadband currently lacks the subscriber base necessary to effectively support Ethernet against legacy WAN services such as ATM, frame relay, leased T-1 and T-3 lines, and plain old telephone service.

According to the Federal Communications Commission, there were 5.8 million residential and small-business subscribers to broadband services, which include DSL, cable, fiber, satellite or fixed wireless, and other wireline connections in December 2001.

Dell'Oro Group forecast sales of DSL access equipment to decline 26% in 2002 to $4.1 billion. But the market research firm expects that the market will start to recover sometime next year.

Based on the small number of DSL subscribers and the RBOCs' nervousness, Nolle doesn't expect a significant deployment of 10G Ethernet in the WAN until 2005.

Despite the hurdles, Ethernet equipment vendors continue their work on standards-based 10G Ethernet boxes with the assumption that customers will be clamoring for the technology soon enough.

How Ethernet will get into the WAN remains uncertain. Some, like World Wide Packet's Thatcher, say corporate deployment of high-speed Ethernet access points will drive demand for 10G Ethernet equipment at the edge of the network. Others, such as Cisco's Jiandani, think demand for Ethernet services will get 10G Ethernet into the WAN. No matter what the driver, it appears 10G Ethernet will get there…eventually.

Caisse is a freelance writer in Massachusetts. She can be reached at kbcaisse@worldnet.att.net.

www.nwfusion.com

My goal is to get you back for firing me. My goal is to exploit your overtaxed IT department. My goal is to take you down.

10G Ethernet elbows into the enterprise

Extreme BlackDiamond switches alleviate
Liberty Medical Supply's bandwidth woes.

■ **BY KIMBERLY B. CAISSE**

Network administrators at Liberty Medical Supply, a Medicare provider of diabetes products and medications, had no qualms about using 10G Ethernet to handle data traffic between the company's facilities spread across several miles in Port St. Lucie, Fla.

"We have a SONET DS-3 [connection], but it doesn't really fit the bill for data, and we couldn't use it for SAN traffic," says network manager Hal Marietta. A DS-3 was too slow to handle Liberty's data traffic.

Liberty Medical just opened a third building last month. When IT made the decision to move from SONET, the company linked its headquarters and the new warehouse using two Extreme Networks' BlackDiamond switches equipped with WDMi (wave division multiplexing with Extreme's Layer 3 Summit "i" chipset) blades. A BlackDiamond 6816 sits at headquarters, while a 6808 is deployed in the data center of the warehouse campus.

Liberty Medical leases dark fiber from BellSouth to carry the traffic, but also keeps a DS-3 line to use as a backup. The 10G Ethernet interfaces are split based on Liberty Medical's service needs, Marietta says. At the moment, 2G bit/sec is dedicated to running the storage-area network (SAN) and another gigabit is used to transmit regular data between the buildings.

"Did we need the 10Gig now? No. But we may in the future," he says.

An application Liberty Medical might use is direct video to the desktop. The 10G Ethernet network can support that bandwidth expansion, Marietta says.

"We would have been hard pressed to meet our needs without this option, both presently and going forward," he says.

Although Marietta doesn't want to disclose what Liberty Medical paid for the 6808 and 6816 boxes, he expects to see a return on investment in less than two years. Pricing for the BlackDiamond 6800 series starts at $21,985 for the basic six-slot configuration, while the WDMi interface is $60,000.

On the West Coast, the University of Southern California Information Sciences Institute recently upgraded the Gigabit Ethernet interfaces on its Foundry Networks' BigIron Layer 3 switches to 10G Ethernet, according to Richard Nelson, director of ISI's information processing center.

The ISI, which is researching bandwidth-intensive grid computing, is part of a small WAN that links it to USC and the One Wilshire Building collocation facility in Los Angeles.

The ISI first wanted Gigabit Ethernet because it's less expensive per port than its previous packet-over-SONET (POS) gear. High-speed Ethernet generally runs one-tenth to one-fifth the cost of POS.

But the price difference between Gigabit and 10G Ethernet ports is nothing to sneeze at. According to Seamus Crehan, a senior analyst at Dell'Oro Group, a Layer 3 gigabit port for a modular fiber connection costs about $1,300, while one 10G Ethernet port costs about $30,000.

Prices of 10G Ethernet network interface cards (NIC) likely will fall during the next five years, which is when Dell'Oro Group expects sales volumes to start increasing.

Dell'Oro estimates that 10G Ethernet will cost about $6,700 per port in 2005.

As 10G Ethernet gears up to storm MANs and WANs, engineers will be working on its current technological limitations.
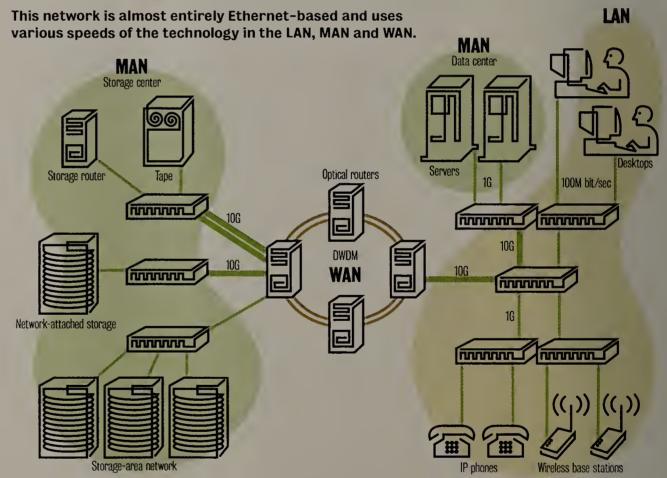
Ethernet's most serious problem in MAN and WAN applications is that it doesn't have the reliability, resiliency and redundancy of SONET, which has a 50-millisecond failover rate. The Spanning Tree Protocol aims to improve Ethernet's failure-and-recovery times to between 3 and 30 seconds, as does Resilient Packet Ring technology.

End-to-end Ethernet

This network is almost entirely Ethernet-based and uses various speeds of the technology in the LAN, MAN and WAN.

Ethernet also still needs to support TDM, which lets telephone companies transmit digital signals on their long-distance trunks.

It also is hard to manage because network administrators can't find faults and performance problems in an Ethernet WAN, says David Passmore, research director at Burton Group.

Ethernet's limited reach has become less of a problem now that the 802.3ae standard is in place. The standard outlines distance maximums — 1.24 miles for short-reach, 6.2 miles for medium-reach and 24.8 miles for long-reach applications — for single-mode fiber. The distance is more limited for 10G Ethernet that runs on multimode fiber.

The WAN-PHY of 10G Ethernet uses SONET framing, which will let the technology utilize SONET amplifiers and repeaters to get around the distance issue in the WAN.

Regardless of the drawbacks, carrier start-ups like Yipes

Enterprise Service, OnFiber Communications and Cogent Communications along with some incumbent local exchange carriers (ILEC) plan to offer Ethernet WAN services. None are offering 10G Ethernet service yet.

"There are [requests for proposal] on the street," Passmore says. "[The ILECs] just haven't moved very aggressively yet."

In the enterprise, the use of Gigabit Ethernet NICs in laptop computers "is putting pressure on wiring closet switches to upgrade to 10 Gigabit Ethernet," he adds. Storage backup is another enterprise function that cries out for more bandwidth. "You need 1G to do this in a reasonable time frame."

To prepare for 10G Ethernet, think about your cabling. 10G is optimized to run on single-mode fiber, says Bruce Tolley, senior product line manager for emerging technologies at Cisco.

He estimates that 90% of companies use multimode fiber. "We have the ability in the standard to support multimode fiber, but it's not clear when we'll get those parts at reasonable prices," Tolley says.

However, more companies will upgrade to single-mode fiber because the fiber infrastructure inside buildings is considered a 10- to 12-year investment, he says.

With companies priming their network infrastructure for 10G Ethernet and engineers making it more robust, Ethernet's movement into the WAN is gaining speed.

Caisse is a freelance writer in Massachusetts. She can be reached at kbcaisse@worldnet.att.net.

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IP storage spans the WAN

■ BY DENI CONNOR

Companies rely on Gigabit Ethernet to shuttle their mirroring and replication data quickly and reliably.

Christopher Black immediately saw the attraction of IP transport for his storage applications. Black, network operations manager for investment and portfolio management company Effron, was looking to protect his data by replicating it from headquarters in White Plains, N.Y., to New York City, about 30 miles away.

He chose to use Gigabit Ethernet combined with conventional Fibre Channel. Spliced together in a new storage architecture called Fibre Channel over IP (FC/IP), the two technologies give Black the ability to send as much as 250G bytes of data per day over the WAN.

"We are replicating SQL Server data from a primary site to a remote hot site," Black says. "The data we transmit consists of financial data for high-profile banks and financial institutions.

Other network applications such as backup and recovery and data mirroring are increasingly relying on Ethernet transport to boost their reliability and scalability. Three storage protocols that use Ethernet are quickly becoming part of the network manager's lexicon: FC/IP, Internet SCSI (iSCSI) and the Internet Fibre Channel Protocol (iFCP). All three operate on top of IP, whether it's implemented as 1G or 10G Ethernet.

"The real benefit of the IP storage protocols is they don't care what the underlying transport is," says Tom Clark, technical marketing manager for IP storage vendor Nishan Systems. "IP storage is indifferent to whether the WAN connection is Gigabit Ethernet, SONET or point-to-point."

Each protocol is being reviewed within the Internet Engineering Task Force (IETF) for standardization, which is expected later this year.

FC/IP is the most commonly used storage protocol in WANs and metropolitan-area networks (MAN). It is well-suited for mirroring data between geographically distributed storage-area networks (SAN) and is rarely, if ever, used as a transport for storage data across the LAN. In FC/IP, Fibre Channel frames are encapsulated in IP packets by FC/IP.

ISCSI encapsulates SCSI packets in TCP/IP wrappers. It's most suitable for deployment in the workgroup to transport block-level storage data from Fibre Channel devices to workstations or servers, but you also can combine iSCSI with FC/IP or iFCP to link remote offices and data centers.
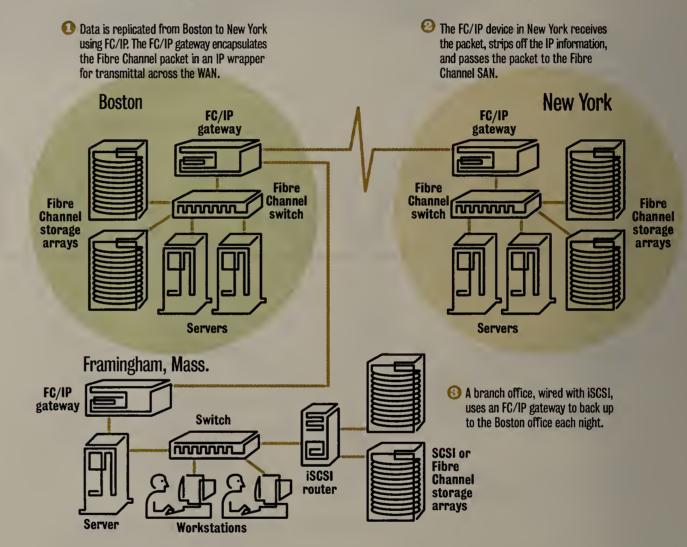
IFCP terminates the Fibre Channel session at the iFCP gateway and converts it to a TCP/IP session over iFCP. The destination gateway receives the iFCP information, initiates a Fibre Channel session, and converts the information back to Fibre Channel. IFCP is a good technology for users who want to preserve their Ethernet infrastructure. However, Nishan is currently the only vendor to offer iFCP products in its IPS 4000.

FC/IP and iSCSI can be implemented several ways over the WAN:

• As a stand-alone appliance, such as CNT's UltraNet Edge Storage Router or Cisco's SN5428.

• As a blade in a multiprotocol chassis, such as Cisco's MDS 9500 Multilayer Director.

• As a port on a Fibre Channel switch, such as the

Combining iSCSI and FC/IP

In this example, two SANs are linked together using FC/IP, while a branch office using iSCSI is able to back up data to Boston over FC/IP.

❶ Data is replicated from Boston to New York using FC/IP. The FC/IP gateway encapsulates the Fibre Channel packet in an IP wrapper for transmittal across the WAN.

❷ The FC/IP device in New York receives the packet, strips off the IP information, and passes the packet to the Fibre Channel SAN.

❸ A branch office, wired with iSCSI, uses an FC/IP gateway to back up to the Boston office each night.

Cisco MDS 9216 Multi-layer Fabric Switch.

Black uses EMC's MirrorView application for replication with CNT's UltraNet Storage Routers and EMC Fibre Channel Clariion storage.

The performance of the storage protocols is limited primarily by the capabilities of IP. Many storage applications can tolerate the 85-millisecond round-trip delay that speed-of-light latency causes in coast-to-coast transfers; but applications such as mirroring and replication of financial data typically require less than a 10-millisecond delay.

"The gating factor appears to be latency," says Jamie Gruener, a senior analyst with The Yankee Group. "Packet-sizewise storage traffic is a lot heavier kilobytewise than traditional Internet traffic, which means to push it a longer distance is much harder to do. People generally are doing 100 to 200 kilometers or less."

When putting storage over IP, consider the size and speed of the pipe and the distance data must travel. Nishan's Clark recommends choosing a link speed based on the importance of the application you want to protect. To absolutely guarantee integrity of data, the

more expensive synchronous methods might work well. But if an application can tolerate higher error rates, choose the faster but less expensive asynchronous transmission.

Brian Cobb, vice president of systems engineering for Fannie Mae in Washington, D.C., the nation's third-largest provider of home mortgages, relies on FC/IP to carry mission-critical underwriting data.

Cobb has between 1,200 to 1,400 servers in two geographically dispersed SAN islands. To join them, he chose FC/IP gear from CNT.

"We were having some failures in the processes we were using for mirroring and replication," Cobb says. "We see good performance with asynchronous replication at a cost we can afford."

Analysts say that for the time being, FC/IP will remain the predominant transport for storage over the WAN.

"FC/IP is best suited to the WAN because it doesn't alter the Fibre Channel protocol in carrying it over IP," Gruener says. "FC/IP is really about tunneling, which has lots of advantages when it comes to the security of data." ■

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Broadband Ethernet: The next frontier

Ethernet needs to enter the first mile to be an end-to-end technology.

■ BY KIMBERLY B. CAISSE

Sometimes a name says it all. That couldn't be truer for the proposed Ethernet in the First Mile standard. Its mission is to turn Ethernet into a broadband access technology to reach the first mile of homes and businesses.

The IEEE 802.3ah EFM task force recently took another step forward in the long standards creation process. At its July meeting, the group selected a suite of technical proposals that will form the basis for the 802.3ah standard, says task force chairman Howard Frazier.

"Draft 1 represents a critical consensus," says Bruce Tolley, vice president of technology for the EFM Alliance and a Cisco product manager. "We still have serious work to do."

The task force is currently reviewing the first draft of the standard. Once that process is concluded, the draft will be released for public comment.

Because it's such an incremental process, Frazier doesn't expect the standard to receive final approval until late 2003 or early 2004.

"I expect field trials to take place before the standard is finished, but wide-scale deployment will probably have to wait until we complete our work," he says.

Once the standard is approved, carriers are expected to start building the infrastructure — and buying the right equipment — for 802.3ah-based service offerings to homes and small businesses.

The task force's primary concentration is on copper wiring, but carriers will likely deploy a mix of copper and fiber, Frazier says. Therefore, requirements for running Ethernet over single- and multimode fiberoptic cables will be part of the standard.

Packet speed will vary based on the type of wiring used for transmission. At a minimum, the proposed standard specifies that packets move between 2M and 50M bit/sec over single-pair voice-grade copper cable. The speeds can improve if multiple pairs of copper wire are used.

The task force has set two speed and distance combinations. If Ethernet moves at 10M bit/sec full-duplex data transmission, then it could reach 2,475 feet. Full-duplex Ethernet transmissions could extend to 8,910 feet if they run at 2M bit/sec.

For point-to-point single-mode fiber links, the proposed EFM standard currently supports speeds of 100M and 1G bit/sec in spans of up to 6.2 miles.

EFM proponents say Ethernet is a superior broadband solution to DSL or cable because the proposed standard calls for the Ethernet frame format to be maintained between subscribers and service providers. "This eliminates the need for protocol conversions, and should result in systems which are simpler and less expensive to build, buy, deploy and maintain," Frazier says.

Ethernet's cost-effective nature helped it take over the LAN, and it is playing an important part in Ethernet's rise in WANs and metropolitan-area networks. "There is nothing stopping it from achieving the same dominance in the access marketplace," Frazier says.

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NetworkWorld SECTOR SPOTLIGHT

FINANCIAL SERVICES

How emerging technologies are transforming key vertical industries.

Capitalizing on streaming media

Investment firms use Webcasts to get the word out to clients.

■ BY CHRISTINE PEREY

Early this year, client services and marketing professionals from accounting giant PricewaterhouseCoopers hit the road with a series of six seminars to drum up business. An average of 70 prequalified attendees filled each event, but now the company uses streaming media Webcasts to reach out to more prospects for less money.

"We discovered that we can generate and work leads just as effectively using 'Webinars' or Web-based seminars for less than 25% the budget per seat," says James Kelly, marketing leader for PWC's Global Risk Management practice. According to Kelly, a seminar series costs roughly $30,000 per city. In contrast, a Webcast only costs about $10,000 per event and can reach people from anywhere on the continent. It's also archivable.

Because streaming media has worked well for PWC's employee training and internal communications, Kelly plans to use it for external communications in the next fiscal year. He intends to try a variety of service providers.

Streaming media, the preparation and delivery of dynamic digital media, such as audio and video across IP networks, is not new to the financial services industry. Financial firms are among streaming media's earliest adopters. Big and small firms alike have proven the value of streaming media for a range of applications.

"Internal applications, including communications among analysts and brokers, CEO Webcasts to employees, salesforce training and compliance-oriented education were among the earliest applications identified as long as four or five years ago," says Paul Ritter, an analyst at The Yankee Group. Still, there were technical obstacles to overcome, and the use of streaming video has grown incrementally within the financial services sector over several years.

Philip Winkel, vice president of marketing at SAFECO Life & Investments, encountered some bandwidth challenges when he tested streaming in 1999. SAFECO's first target audience was advisers in the field who sell the company's funds.

"SAFECO mutual funds are sold by a wide variety of advisers. Some are on low-speed networks, others are on high-bandwidth connections. . . . This diversity in capabilities among thousands of offices nationwide was extremely difficult to target for," Winkel says.

His IT department wasn't prepared to support the technology, so Winkel outsourced the project to Loudeye Enterprise Communications. The service provider offered a turnkey service, and its proximity to SAFECO made it easier for them to work together.

Loudeye services can encode and host the same content at multiple data rates and in formats that are accessible and appropriate for many connection speeds. Loudeye's servers can automatically detect the connection speed of a user and spawn the file that will produce the best experience.

Winkel wouldn't discuss pricing, although Loudeye's rates are publicly available. Pricing varies depending on audience size and features. For a live Webcast with 5,000 attendees and features such as branded registration pages, synchronized slides, e-mail question and answer, live voting/polling, survey, hyperlinks and indexing, expect to pay about $12,500.

Dick Hubert, president of streaming media content producer VideoWare, says the reasons for the streaming media boom in the financial services sector boil down to one basic ingredient: time. "Whether you're on the buy side, selling stocks or managing assets, you have to be gathering and distributing information continuously," he says.

Some of Hubert's clients, such as Mark Mitchell, marketing manager for third-party distribution at TRowe Price, are reaching streaming media viewers over the Internet.

TRowePrice posts streaming assets on its Web site and adds more each quarter. "With a conversational format like an interview, we can 'humanize' [fund managers] for a much larger number of people than we could ever reach face to face," Mitchell says. "For us it's a question of reaching the maximum number of the right people with information that they can use, when they need it."

Earnings Webcasts are another popular use for streaming media in the finance industry. To comply with the Security and Exchange Commission's Regulation Fair Disclosure, public companies must make their earnings announcements and financial status communications available to investors on a broad, nonexclusionary basis, such as a press release, filing with the SEC, an audioconference call or a Webcast.

Audioconferences with hundreds or thousands of investors are more expensive than using the Internet with streaming audio. For example, a 90-minute financial presentation for 20,000 listeners would cost $486,000 on a toll-free audioconference bridge, according to an analysis by The Yankee Group's Ritter and Web-based investor relations service provider CCBN. A company could reach the same audience for between $1,000 and $3,000 using an audio-only Webcast.

Even smaller companies with only 100 to 150 participants in conference calls can benefit from streaming media. "If you can offload about 50 people from the audioconference call to the Webcast, you've paid the basic costs for the Webcast," says Greg Radner, vice president of marketing at CCBN.

To make sure that their media is available to the public in a timely way and streamed in the best possible conditions, most companies using streaming for investor relations outsource media delivery to specialized service providers such as CCBN, ON24, and Shareholder.com.

Although the lowest cost "audio-only" streaming experience is most popular with companies just starting out

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■ FINANCIAL SERVICES: AT A GLANCE

● **Sectors that use streaming media:**
Investment banks and underwriters, commercial lending, retail banking, mutual fund and asset-management firms, brokerages, insurance companies, credit card firms.

● **Types of streaming being deployed:**
Daily updates to brokers in remote offices, interdepartmental meetings, CEO Webcasts to employees, corporate broadcasts and announcements, salesforce training and education, compliance training, customer outreach and education, sales channel partner collaboration, earnings Webcasts, press conferences, new product launches, corporate events, seminars, conferences and trade shows.

SOURCE: THE YANKEE GROUP

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with Webcasts of earnings conferences, many move up the value chain to add synchronized slides on a Web page. Then some elect to enhance the interactivity with the audience through online questions and answers.

No matter where one starts, it's difficult to find a financial services company that has not experimented with streaming media. Some have deployed fully but more are making the investment now and leveraging those to their maximum reach in the months and years to come.

Perey is president of Perey Research & Consulting in Placerville, Calif., a firm that provides business development consulting services and research on the use of video in the enterprise. She also is a member of the Network World Global Test Alliance and can be reached at cperey@perey.com.

Management Strategies

Doing your patriotic duty

Government contractors step up recruiting to meet demand for homeland security IT initiatives.

■ BY CAROLYN DUFFY MARSAN

With federal IT spending increased dramatically this year, government contractors are reporting significant demand for network professionals in Washington, D.C., and other major metropolitan areas around the country.

On Oct. 1, the federal government started a new fiscal year with plans to increase IT spending by 15.6% to a record $52 billion. In addition, the Bush administration has projected double-digit growth in IT spending in each of the next four years. Much of that funding will be invested in communications networks required for high-priority e-government and homeland security initiatives.

"It's a very exciting and challenging time to be in the federal marketplace," says Alan Balutis, executive director of the Federation of Government Information Processing Councils and a 27-year veteran of federal government service. "The challenges that government faces in delivering services online and homeland security, one would hope can motivate a generation in a way that President Kennedy's call to public service did in the 1960s."

Federal contractors are experiencing a boom because more federal agencies are outsourcing the development and maintenance of network infrastructures and applications. In 2001, contractors received 70 cents on every dollar that the federal government spent on IT, according to a National Academy of Public Administration report.

Unisys Federal Government Group is on a hiring binge after winning a contract in August to create the IT infrastructure for the new Transportation Security Administration (TSA), which is responsible for baggage detection and passenger screening at U.S. airports. This award, worth $244 million over the next two years, is one of the first IT initiatives stemming from the government's homeland security efforts.

"A major reorganization like this hasn't occurred in the federal government for 40 years," says Ira Kirsch, president of Unisys Federal Government Group. These homeland security efforts are "all about inter-agency communications and the dissemination of data."

Unisys is looking to hire 400 network professionals, including consultants, designers and engineers. For the TSA job, Unisys also needs people to conduct site evaluations and deploy network infrastructure at 446 airports.

"We need people in the bigger metropolitan markets where the large airports are: Los Angeles, Chicago, Atlanta, New York City and Denver," Kirsch says. "We need people with Microsoft certifications and Cisco certifications, and we have a big, big requirement for certifications in the security area."

Unisys says it's filling job openings in 45 days on average, and the pay it's offering network professionals is higher than in re-cent years. One perk is career development and ongoing training at Unisys University, which offers 120 technical certifications.

"There's really a buzz in the federal marketplace," Kirsch says. "Employees are jumping into TSA from all different agencies because they're caught up in the excitement about doing something patriotic…And this is not something that's short term. These homeland security efforts are never going to be [over]."

Similarly, Northrop Grumman Information Technology (NGIT), a $5 billion systems integration division of the aerospace giant, will add 4,000 IT professionals this year including 1,000 network professionals. NGIT has won $336 million in contracts from the Army, Air Force and the Defense Information Systems Agency in September.

"We're doing at least that much hiring for next year," says Jeffrey Shuman, vice president of human resources and administration for NGIT. "It's not that we're losing people. We are winning some nice contracts, and our attrition rates are quite low. So this is really about growth."

Shuman says NGIT needs network systems engineers, network infrastructure engineers and those with at least five years of experience designing and installing LANs and WANs. The greatest demand for network professionals is in Washington, D.C., Southern California, Colorado Springs, and Omaha, Neb.

"We need people with experience designing, developing and installing satellite, data and voice networks," Shuman says. "We need people with security and firewall experience and experience in Unix, Windows NT and Windows 2000."

Some of NGIT's open jobs are best suited for network engineers with defense industry experience and active security clearances, but others are for contracts with civilian agencies such as the U.S. Postal Service and state and local law enforcement.

Shuman says NGIT is receiving about 60,000 unsolicited resumés per month, up from 10,000 per month a year ago. Still, he says the company is actively recruiting top talent with perks such as technical training, tuition reimbursement and telecommuting.

"We're seeing a major boomerang effect," Shuman says. "Those who left us for dot-coms and telecoms are coming back … Overall, the compensation package is competitive. But we're not marketing that if you work for us, in a year you'll be a millionaire."

Shuman says the real attraction of working at NGIT is the leading-edge nature of the network and security technologies being deployed in the federal sector. "The network jobs we have available are critical to our future," Shuman says. "IT is the cornerstone of what we do. It's not a support function here." ■

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San Francisco **63,633**

Los Angeles **97,196**

71,695 Chicago

63,479 Philadelphia

160,255 Boston

54,149

New York

Washington, D.C./Baltimore **380,885**

Norfolk, Va.

42,871

43,573 Atlanta

SOURCE: U.S. OFFICE OF PERSONNEL MANAGEMENT, 1998

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> **Ira Kirsch,** President, Unisys Federal Government Group

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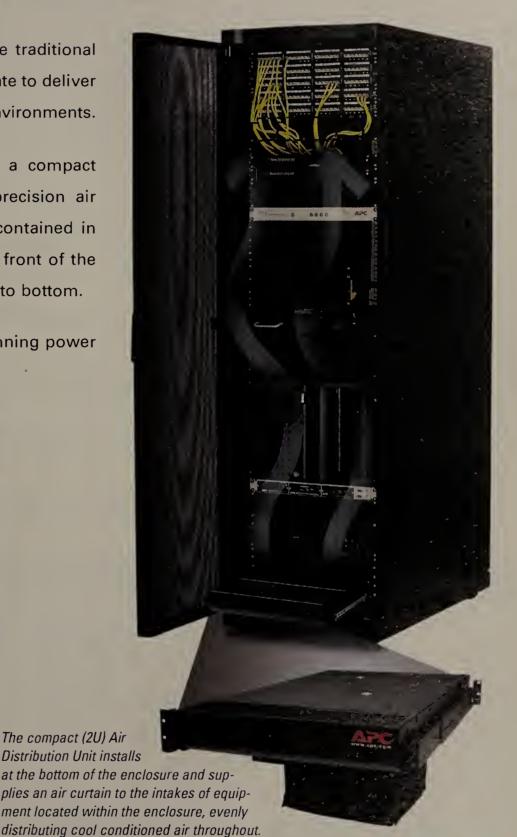
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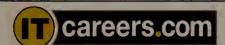Software Developer, experienced, to work in our Glenwillow, OH office. Send resume to Attn: SD, Royal Appliance Mfg. Co., 7005 Cochran Road, Glenwillow, OH 44139 or on-line at resume@dirtdevil.com. EOE.

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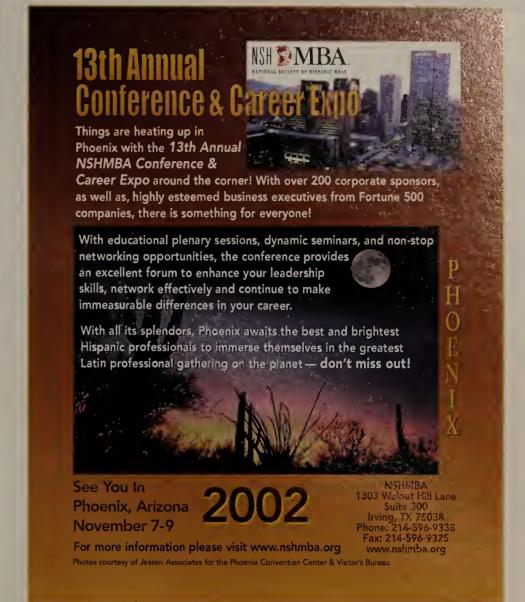Suite 216
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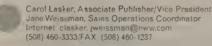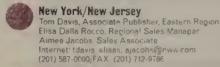
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Wireless LANs

135 privately held wireless companies raised $1.4 billion in venture capital, with about half of it going to infrastructure vendors, according to Growthink Research. The market research firm estimates that one in every 10 venture capital dollars spent through June went into the wireless market and that about the same was true during the corresponding period last year.

"As an investor, I focus on cost per bit," says Chris Brookfield, general partner with Northwest Venture Associates. "In wireless LANs, it is incredibly inexpensive to move data, compared with other wireless technologies like [Cellular Digital Packet Data], [General Packet Radio Service] and 3G."

Brookfield sees the wireless LAN market as a hotbed of innovation. "All of my investments [in wireless] focus on how to give users access to their applications wherever they are, whenever they want," he says. "Then, they find new ways to be productive. We've seen that over and over again in cell phones, e-mail and other things."

Here's a sampling of developments that could be coming to wireless LANs.

Greater reach

In today's wireless LANs, with power limited by the Federal Communications Commission, performance drops markedly as the distance between access points and adapter cards increases. Under the best conditions, 802.11b has a range of about 300 feet; 802.11a goes about one-third of that. At maximum distances, throughput can drop from the typical actual throughput of 5M to 7M bit/sec for 802.11b and 18M to 21M bit/sec for 802.11a to mere kilobits per second if loads of users are linked to one access point.

While vendors are trying to address the distance issue through creation of advanced silicon and better antenna designs, one of the more intriguing solutions is the use of mesh networks that provide a new way for wireless LAN radios to interact.

Wireless LANs today are based on client adapter cards that wirelessly link to an access point, which is then wired into the corporate LAN. Technically, 802.11 clients can create ad hoc connections to one another, but this isn't widely used.

MeshNetworks is one of several companies building software to create a mesh instead of a hierarchical wireless LAN (others include SkyPilot, Ember and CoWave Networks). The software loads on the wireless adapter card and turns every adapter into a repeater-router, instead of an endpoint looking for an access point.

This means your wireless PDA can hop through someone else's wireless laptop, or through several, to finally reach an access point to the corporate network.

There are two results. One is the wireless LAN can extend wherever mesh clients exist. Second, because you're connecting to the nearest wireless LAN radio instead of a more distant access point, radio physics dictates that your throughput will be higher. You'll be able to run at closer to the 5M to 7M bit/sec that's typical of an 802.11b LAN.

MeshNetworks has acquired exclusive rights, including patents, to mesh technology originally created by the Defense Advanced Research Projects Agency. The company's software is essentially a routing layer, which vendors will load on their wireless LAN adapter cards and access points.

The company is developing ASICs to move this processing into silicon, instead of firmware, for faster performance, according to Rick Rotondo, director of disruptive technologies.

MeshNetworks engineers have created algorithms to minimize the power used in each hop and the latency each creates. Rotondo says each hope is less than 5msec.

The software is in beta test with a half-dozen adapter card vendors. Rotondo says the initial version of the software, called MeshLAN, will ship this fall.

Faster and smarter

Wireless LANs today, like the earliest Ethernets, are a shared medium. Technically, the wireless LAN radio spectrum of 2.4 to 2.5 GHz will remain shared. But new software, and advances in chip and antenna technology, will give users the experience of having the maximum bandwidth possible as if they were part of a switched network. Those same advances will let network executives secure, monitor and control wireless networks as never before.
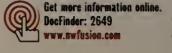
"Unlike today's wired network, where you have different layers with different requirements and capabilities, in the wireless LAN world [today] you only have the access point," says an executive with one wireless start-up that's not yet come into the open. "Those access points are going down in price like you wouldn't believe. But the need for higher functionality — security, roaming, bandwidth management and so on — is going up."

The executive declined to go into detail about his start-up's technology, except to say that the goal is to create a switching architecture that can, in effect, corral the wireless packets, and precisely route, administer and control them.

The groundwork for these higher-level features can be seen in dedicated gateways such as those from Bluesocket and Vernier, both well-funded wireless start-ups. These products can make it feasible to set security levels, access controls and even traffic priorities, based on centrally maintained policies that apply to groups of wireless LAN users.

Currently, almost all these vendors promote their products as security solutions, compensating for the weaknesses in 802.11. But almost all are aiming at a larger target. "You'll see us evolving [our product] into a management node," says Eric Janszen, CEO of Bluesocket. "The security stuff will be built into future standards. To do policy decisions, for access control and network management, you have to be able to examine every single [wireless] packet that's moving between devices."

Symbol Technologies has just introduced a box, called a wireless switch that includes Layer 3 and Layer 4 switching features. This switch handles wireless packets that come to it from simplified wireless access points, which are scarcely more than stripped-down 802.11b radios.

Switching features will let wireless networks map into existing network policy and directory databases, to match specific service levels with specific users or groups.

Hybrid networks

This fall, expect to see a slew of "combo cards," wireless adapters that can connect with two or more different types of networks.

New "dual-band" chips that can shift between 2.4-GHz 802.11b networks and 5-GHz 802.11a networks will create some of this hybrid capability. The main limiting factor in 802.11b networks is that only three channels are available in that frequency range, whereas there are eight available for 802.11a.

This means you can pack more 802.11a access points closer together and support more users without inter-ference than you can with the same number of 802.11b access points. Many corporate network executives are looking for an easy way to deploy both and manage a gradual migration to the higher throughput of 802.11a.

Dual-mode cards are a key part of achieving this migration. They will sense, select and connect (assuming you're authorized) to whichever wireless LAN will yield the best performance from a given location.

Another hybrid is an adapter that can shift the client between an 802.11b/a wireless LAN and a long-distance cellular network, such as the widespread but slow CDPD networks and the emerging, faster GSM networks.

Transat Technologies is a 2-year-old company approaching this issue from the standpoint of the wireless service providers. Its software loads onto a carrier's subscriber identification module (SIM) cards, which fit into a cell phone or PC/PDA adapter card, and identify the subscriber to the carrier's network. SIM cards use the client device's 802.11b wireless adapter to jump to the carrier's cellular net to validate and bill the subscriber.

"We make the wireless LAN look like a piece of the existing cellular net," says John Baker, Transat's president and CEO. The software is expected to be released this fall.

Advances in antenna technology will let a wireless device have one embedded antenna that can handle multiple radio frequencies.

Etenna has developed a technique that, in effect, lets a manufacturer "print" an antenna on plastic and fit it to a circuit board.

If chip builders and other manufacturers adopt this technology, it will be the basis for inexpensive, and small, radio antennas. Even more important, it will let one antenna automatically handle 2.4-GHz and 5-GHz transmissions.
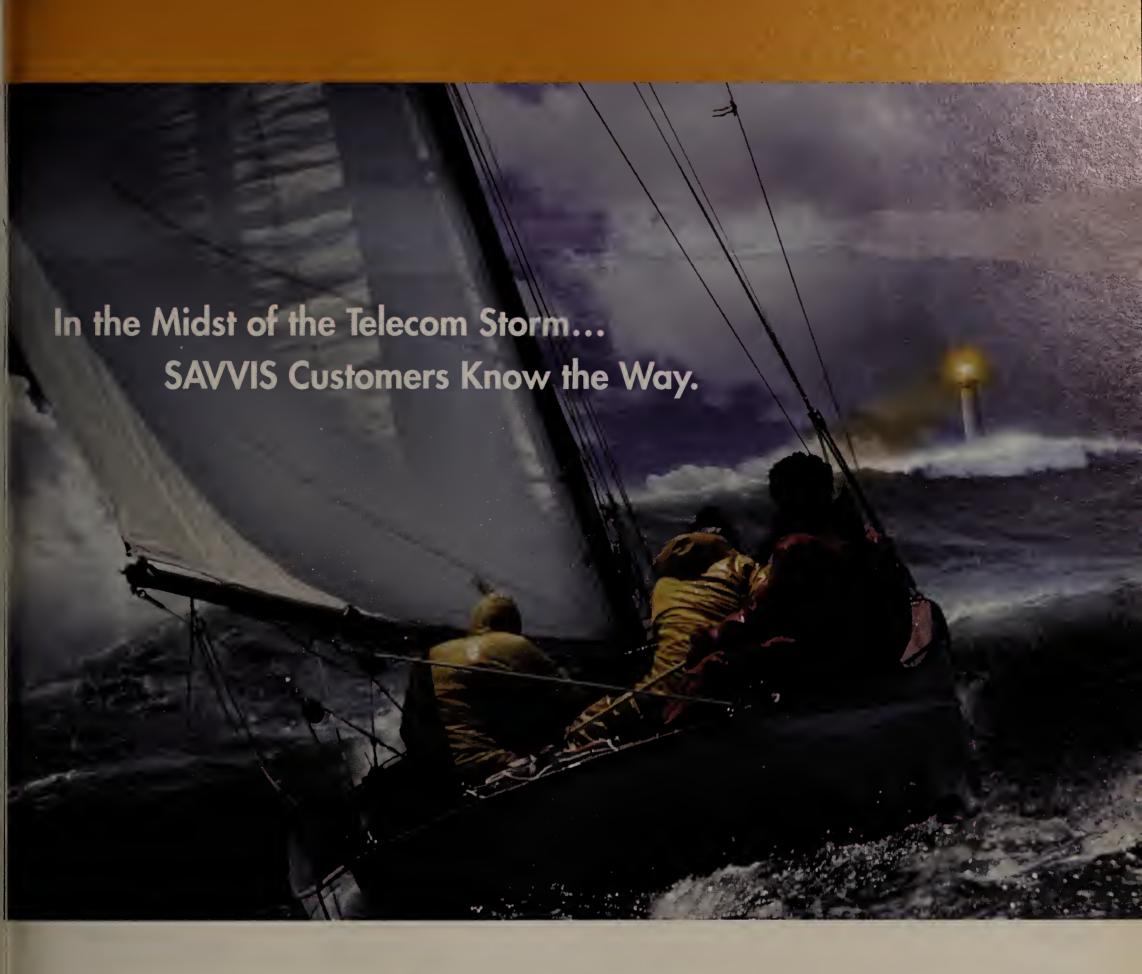
Security

Currently, wireless LAN security is a mess. The original 802.11 security scheme, called Wired Equivalent Privacy (WEP), had a number of weaknesses. Default settings for wireless LAN gear typically would simply shut off all security, including even the minimal security WEP offers.

Most initial security add-on solutions for wireless LANs attempt to adapt such established technologies as VPNs and Remote Authentication Dial-In User Service authentication. Few network executives at this stage seem ready to adopt the complex administrative overhead of digital certificates and public-key infrastructure.

The IEEE 802.11 Task Group I is finalizing work on a number of security enhancements. These will have to be implemented by equipment vendors to be effective. The work compensates for a number of WEP problems, strengthening the encryption and making WEP easier to administer. ■

On the drawing board

What to expect in wireless LAN innovations.

What's needed	Technology in development
Greater reach	Next-generation silicon; radical new antenna designs; autosensing adapters that link to either wireless LAN or wide-area cell nets.
More speed	New 802.11a and 11b chips; antenna improvements.
More intelligence	Introduction of Layer 3 and 4 switching features; intelligence distributed to access points and controllers.
Hybrid nets	Autosensing and configuration between various wireless LAN frequencies, and between wireless LAN and wide-area cell nets.
Better security	802.1x authentication, with protocols for user ID/password or digital certificates; Advanced Encryption Standard.

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Exchange

security and management infrastructure of the operating system, and made available to a broader range of end users and applications, such as line-of-business and productivity applications, Microsoft says. Also, developers can craft those applications without having to worry about the Exchange platform.

In addition, Microsoft unveiled a project code-named Jupiter — which combines BizTalk 2002, Commerce Server 2002 and Content Management Server 2002 — and is the company's first attempt to trim the bloat from its line of 13 .Net enterprise servers. It was Microsoft's first public nod that its .Net server line has become too complex of an integration story and needs to be downsized.

Taken together, the two developments highlight the company's ongoing attempt to define its convoluted .Net infrastructure, which will be its foundation for the next generation of distributed applications based on Web services technology.

Perhaps the biggest development at the conference was the first real details of a project code-named Greenwich, which will bring instant messaging, presence and conferencing to Windows .Net Server 2003, which is expect-

ed to ship early next year. Greenwich is slated to ship sometime before October 2003.

Greenwich is inheriting services that have been cut from the next version of Exchange, code-named Titanium, confirming that Exchange Server is on an evolutionary path away from providing a foundation for real-time collaboration and application development.

"Clearly what Microsoft is focused on is that Exchange is a scalable and secure e-mail platform," says Matt Cain, an analyst with Meta Group. "The notion that this is a collaboration and groupware platform has gone by the wayside."

That's much different than two

In the pipeline

Microsoft last week detailed several initiatives at its Exchange Conference that signal changes for its operating system, business software and messaging platform.

Code name	Change	Due date
Greenwich	Instant messaging, presence and conferencing services will be extracted from Exchange and plugged into the base operating system with Windows .Net Server 2003.	Before October 2003
Jupiter	The 2002 versions of BizTalk, Commerce Server and Content Management Server are being brought together for a combined workflow, e-commerce and content publishing system.	Phase one in the second half of 2003; Phase two in the first half of 2004.
Titanium	Next version of Exchange will be focused on administrative, performance and the user interface rather than as a collaboration platform.	Mid-2003

years ago. Instant messaging and conferencing features, along with the Web Storage System data store and Local Web Storage System to support offline use of applications, were the highlights of the Exchange 2000 platform Microsoft touted for its maturity as a collaboration and application development platform.

Today, all that technology is being moved out of Exchange or killed and replaced with other technology, and Microsoft now is

❝ Instant messaging and conferencing were our big selling points for Exchange 2000 and now they are taking them out. That bothers me. ❞

Francis Blay
Exchange administrator, RWD Technologies

touting administration features, user interface improvements and mobility features for Titanium. Microsoft also is introducing an API called Exchange Server Objects that lets developers use Exchange's messaging transport, calendaring, tasks and contact lists in applications that don't have to run on Exchange. The API is a precursor to the type of programmatic access to Exchange that Microsoft ultimately hopes to deliver with Simple Object Access Protocol-based interfaces.

The emphasis on Exchange's messaging roots is welcome news, according to some users. "The more rock solid they can get this messaging platform the better," says Gary Stoynoff, product

consultant for network software for the Wisconsin/Michigan chapter of the American Automobile Association, which is running Exchange 5.5. "They need to focus on the basics rather than the bells and whistles. Exchange is our core messaging platform."

But Greenwich will mean changes for those who have rolled out Exchange 2000 and its instant messaging and conferencing capabilities.

"Instant messaging and conferencing were our big selling points for Exchange 2000 and now they are taking them out. That bothers me," says Francis Blay, Exchange administrator for RWD Technologies of Columbia, Md., which develops training manuals for car manufacturers and online e-learning technology. "I still have to evaluate what is happening, but Greenwich looks like it will force us to Windows .Net Server if we want to upgrade to Titanium and keep instant messaging."

Anticipating any riffs, Microsoft officials say Exchange 2000 customers will not lose instant messaging capabilities regardless of what they do.

"Exchange 2000 users will get equal functionality going forward. Instant messaging will never be taken away," says Paul Flessner, senior vice president for .Net Enterprise Servers. "I will take care of it myself even if I have to fly in and deliver it to them."

Flessner says the switch from Exchange to Greenwich was made because Microsoft realized instant messaging is a "platform technology that all of our cus-

tomers should have, not just Exchange customers. Instant messaging is a big play and we want that technology available broadly."

The average instant messaging deployment reaches 16% of an organization's users today, according to Osterman Research, which expects that number to grow to 29% next year.

Microsoft plans to offer Exchange-to-Greenwich migration details before year-end, according to Don Rule, program manager for Greenwich, including details on Exchange Conferencing Server, which will see a halt in development work. Microsoft also will ship a Windows Messenger 5.0 client shortly after Greenwich that works with Exchange 2000 and Greenwich instant messaging.

Rule also said the benefits of having instant messaging in the operating system is that Microsoft can provide archiving and logging capabilities using SQL Server. He added that support in Greenwich for two standards will allow for interoperability not available with Microsoft's proprietary Rendezvous Protocol for instant messaging that Exchange 2000 uses today. Those standards are the Session Initiation Protocol and SIP for Instant Messaging and Presence Leveraging Extensions, an emerging standard for interoperability among disparate instant-messaging systems.

But real-time communication isn't the only place Microsoft is cleaning up its .Net story.

The company's Jupiter project aims to simplify Microsoft's trio of business servers that offer workflow, content management and e-commerce support.

"Jupiter is an attempt to reduce

the number of .Net servers and make an attractive price point," says Dana Gardner, an analyst with Aberdeen Group.

Microsoft has 13 .Net servers, and Jupiter's combination of BizTalk 2002, Commerce Server 2002 and Content Management Server 2002 represents a logical pairing for corporations running e-commerce Web sites.
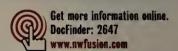
Jupiter initially will extend the business workflow capabilities of BizTalk 2002 and its range of 300 connectors for legacy systems to the content authoring and publishing processes of Content Management Server and the e-commerce process supported by Commerce Server.

Microsoft says it intends to support a recently proposed workflow protocol it developed with IBM and BEA Systems, called Business Process Execution Language for Web Services, and its proposed WS-Security specification to support interoperability.

Jupiter also will tightly integrate with Office on the desktop and Visual Studio .Net on the developer side.

Eventually, Jupiter will become a set of XML-based components offering services such as catalog management and personalization, Microsoft officials said.

"We are taking a broad set of functionality and trying to break down the barriers between them," says Dave Wascha, lead product manager for e-business servers at Microsoft. "People have been asking us how these [servers] work within .Net, and this is the answer." ∎

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BackSpin Mark Gibbs

Why DRM will never work

Digital rights management has been much talked about for the last few years because it addresses a big issue: content piracy. The problem is that everyone from children to grandparents can rip tracks from a CD and share them with friends around the world.

But wait! Twenty years ago you could tape material from a record and illegally share the content by dropping it in the mail. What's changed? The fact is it is now easier to rip a CD than copy a tape or a record, the quality is more or less perfect, the speed of transfer between individuals has gone through the roof, and the cost of copying (time and media cost) has dropped like a brick.

But content piracy is not a new problem for record and movie companies; it has just grown to become a larger financial issue. So it isn't surprising that content owners and publishers are interested in DRM.

All ethically minded adults would agree that, given our culture and laws and no matter how inflated the price of CDs or other media might be, those who hold the copyright have the entitlement to apply whatever controls they please.

The only problem is controlling the use of content once it becomes digital is impossible because digital technologies for encoding, decoding, storing and transporting content are all about moving bits, not atoms, and you can't defend bits.

You can defend atoms. You put the atoms in a box and put a lock (more atoms) on it. Not so with bits. It would seem obvious that bits are different but that's what DRM ignores. And that's what the high-tech vendors pushing DRM products gloss over and try to get around by using — guess what — atoms!

For example, Microsoft's Windows Media comes with a full and extensive DRM system called Microsoft Windows Media DRM. But to make this system (or any other DRM system) work, atoms that store content bits have to be put inside boxes with virtual locks that are controlled by DRM bits.

The problem is that if the boxes of atoms — the digital devices — are to be secure, their functionality must be limited. This means that if you want to license Microsoft Windows Media DRM for your hardware product you'll need to jump through some hoops that will have a profound effect on your design.

In Gearhead this week (page 46) we took a look at the ZapMedia ZapStation, an attempt at an all-in-one multimedia center (CD, CDR, DVD, MP3, streaming media and others). One thing that seemed odd about the box's basic design was you could import content only by FTP with no support for Windows shares and no remote content management. Once the content is in the device you can burn CDs (DRM rights permitting) and delete content, but that is all you can do. And the hard disk is not upgradable.

The reason it was designed this way is Microsoft licensing. Because ZapMedia wanted to support Windows Media, which it saw as important to product positioning, it had to comply with Microsoft's licensing requirements. These stipulate that acquired content can't be exported, has to be encrypted on disk, and so on. The result for Zap-Station is hugely compromised functionality.

And even with all of this control, you still can burn a CD on the ZapStation, load that into a PC and RIP it into MP3 files. Once again we see trying to control bits is like trying to nail Jell-O to the wall.

Building devices that are closed systems to control bits is futile and a wasted effort. Those who want to be ethical in their use of bits will be ethical without the aid of atoms, and those who will act unethically won't be stopped by atoms.

The consequence is that DRM will never work. Many content owners and hardware vendors think it is the only way to go, as they can't imagine not having control and are unwilling to admit the truth: No matter what you do, you can't control how people will use your bits once they have 'em.

Send some bits to backspin@gibbs.com.

'NetBuzz News, insights, opinions and oddities

By Paul McNamara

A good idea, well executed, but . . .

The idea made a lot of sense in 1998 when Internet Mail Consortium Director Paul Hoffman first explained it to me.

The impetus was that spammers were regularly besmirching the good names of legitimate businesses by funneling their junk through open SMTP relays on corporate e-mail servers, thus creating the impression that the owner of a hijacked server was the sender of the spam. Cleaning up the resultant mess could be time-consuming and costly for the victim, especially in terms of public relations. Moreover, the easy availability of cost-free, risk-free delivery was thought to be fueling what even then was considered an explosive growth in spam.

One defense, as espoused by Hoffman and others in the Internet mail community, was simple enough: Close off SMTP relays to all but a network's known users, and spam would be reduced because spammers could no longer hide their true identities behind the servers of their unwitting hosts. Forced into the open — or at least to fend for themselves — they would become easier to shut down, and, it was hoped, fewer in numbers.

The good news is that e-mail managers heard the message and bought the reasoning. Hoffman's first survey of SMTP relay practices in 1998 showed that slightly more than half were flapping wide open, meaning spammers were practically tripping over potential launch pads. The survey was conducted roughly once a year and showed a steady decrease in the number of open relays. The latest survey, in August, revealed that only a tiny fraction of relays — fewer than 1% — remain open.

"The social engineering that we did to tell people to shut down their relays absolutely worked," Hoffman says.

The bad news, as you have likely figured out, is that none of this has done anything to reduce spam.

"Even with essentially an almost complete closing off of relays, spam continues to get significantly worse," Hoffman says. "I thought we would sort of flatten it out, or that this could make it harder for them . . . and it actually hasn't made it harder for them at all."

Which is discouraging enough, but the news gets worse: Not only did closing those relays do nothing to stem the flow of spam, it also made sending e-mail more difficult for some corporate road warriors.

"This is the Internet — things change, so you've got to be flexible," Hoffman says. "This 'never have an open relay' [advice] turned out to be quite inflexible — that is, it prevents people from sending stuff — and it didn't stop what we wanted it to stop."

Does that mean e-mail managers should reverse course?

"I'm not saying that people should go ahead and open up their relays, because they will get nailed by spammers," Hoffman says. "The spammers really don't care at this point; they are happy to saturate your Internet connection if they can. So it's not smart to open up your relay, but if you need to — if there's a business reason to do it, you should. The smarter thing to do is authenticated SMTP, but a lot of people can't figure that out."

So if closing the relays didn't produce the desired results, which of the myriad antispam schemes floating about today might actually do the trick?

Hoffman's opinion: None show much promise. Oh, he does believe that a well-crafted, vigorously enforced federal antispam law would help. But the chances of that happening are no better than the likelihood of all the spammers simply seeing the error of their ways and quitting.

What? You want a happy ending? . . . Go rent a movie.

The in-box here is always open. The address is buzz@nww.com.